STATE OF MINNESOTA DISTRICT COURT

COUNTY OF RAMSEY SECOND JUDICIAL DISTRICT

Case Type: Other Civil

- -

The State of Minnesota,
by Hubert H. Humphrey, III,
its Attorney General,
and
Blue Cross and Blue Shield
of Minnesota,

Plaintiffs,

vs. File No. C1-94-8565

Philip Morris Incorporated,
R.J. Reynolds Tobacco Company,
Brown & Williamson Tobacco Corporation,
B.A.T. Industries P.L.C., Lorillard
Tobacco Company, The American Tobacco
Company, Liggett Group, Inc., The Council
for Tobacco Research-U.S.A., Inc., and
The Tobacco Institute, Inc.,

Defendants.

- -

DEPOSITION OF CHRISTIAN D. WUNSCH, M.D., Ph.D.

Volume I, Pages 1 - 302

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(The following is the deposition of CHRISTIAN D. WUNSCH, M.D., Ph.D., taken pursuant to Notice of Taking Deposition, at the offices of Dorsey & Whitney, Pillsbury Center South, 220 South Sixth Street, Minneapolis, Minnesota, commencing at 8:36 a.m., September 3, 1997.

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I N D E X

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Dr. Wunsch	Mr. Orenstein	4

E X H I B I T I N D E X

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P R O C E E D I N G S

(Exhibits 3103 - 3105 marked for identification.)

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(Witness sworn.)

CHRISTIAN D. WUNSCH, M.D., Ph.D., called as a witness, being first duly sworn, was examined and testified as follows:

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ADVERSE EXAMINATION

BY MR. ORENSTEIN:

Q. Good morning, Dr. Wunsch. My name is Howard Orenstein, I'm one of the attorneys for the plaintiffs in this case. The plaintiffs are State of Minnesota and Blue Cross and Blue Shield of Minnesota. And I'll be taking your deposition today.

Could we start by having you state your full name for the record, please?

A. My full is name Christian Dennis Wunsch.

Q. And where do you live, sir?

A. I live in DELETED.

Q. What's your home address?

A. My home address is DELETED.

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Q. And what is your business address, sir?
A. My business address is 1611 Northwest 12th Avenue, Jackson Memorial Hospital.
Q. Okay. That's at the hospital, not at one of the labs?
A. That's correct. My office is in the hospital.
Q. I see. Do you understand that you're under oath in the proceedings today?
A. I do.
Q. Do you know what it means to be under oath?
A. I do.
Q. What does that mean to you?
A. It means that the testimony that I give will be true to the best of my knowledge.
Q. And do you understand that this is unlike a normal conversation, where we might talk over each other, but we have to allow each other to finish questions and finish answers?
A. I understand that.
Q. Do you understand, also, that the court reporter is taking down what I say and what you say and that she's unable to take down a nod of the head or uh-huh or huh-uh, so we need to answer with yes or no?
A. I understand that. But I will need reminding.
Q. Okay. That's only human.

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A. (Nodding.)
Q. There may be a time today when I ask you a question that you just don't understand, or that you need me to clarify. Will you tell me that?
A. I will do that.
Q. Okay. Do we have the understanding that if I ask you a question and you don't ask me to clarify that you've understood the question?
A. Yes, that's agreed.
Q. Is there any reason why you're unable to testify truthfully and fully here today?
A. There's no reason.
Q. Okay. Are you under any medication at all?
A. I'm not receiving any medication.
Q. Okay. Are you under any physical or emotional disabilities, maybe a hearing problem, that would prevent you from testifying fully and truthfully?
A. None that I'm aware of.
Q. Now this is going to be a fairly long day, and there may be times when you want to take a break. We'll try to take regular breaks, but if there's a time when you just really want to take a break, to go to the bathroom, or for whatever reason, will you please tell me that?
A. I will do that.

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Q. I will do my best to accommodate you. I don't want to take a break in the middle of a question --
A. Understood.
Q. -- but if we're at a natural breaking point I'm sure I'll be able to accommodate you. Will you ask me if you need to take a break?
A. I will do that.
Q. Good.
Dr. Wunsch, would you tell me in your own words why you're here today?
A. I'm here to testify with respect to expert knowledge that I may have regarding a number of issues that have been raised with respect to diagnoses, medical diagnoses, the way diagnoses are generated, the way they're recorded. The basic system of medical records. And information with respect to scientific investigation, scientific methodology, the role of mathematics and statistics associated with some of that methodology. And -- and some specific instances with respect to malignant disease, and in some areas the -- the biochemical and biological mechanisms associated with malignant disease. These are all issues which are subject matter of my expert report.
Q. There may be a few other categories of areas

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that you list in your expert report and we'll go over them as the day progresses.

A. Okay.

Q. But you didn't mean to exclude anything by virtue of the fact --

A. No, I did not.

Q. -- that you did not enumerate some things?

A. That's correct, I did not mean to exclude anything that may have been in my expert report.

Q. Okay. You've used the term expert report and expert opinion. In your own words what does it mean to you to be an expert in a lawsuit?

A. To be an expert in a lawsuit I think usually requires that someone has, by experience, by education, and research, special insights into the subject matter that would not be generally available to either the lay public or to other people who are not part of either the profession in which the subject matter may reside, or that could generally be expected of people who are only casually familiar with the professional aspects of the subject matter in question, for which the person is a presumed expert.

I guess it's another way of saying they know a lot more about it than other people.

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Q. So do you feel that you know a lot more about the subject matters that you list in your report, than the lay public generally, or people in your profession who may not specialize in these areas?
A. Correct.
Q. What is your understanding of the dispute between the parties in this lawsuit?
A. I really have a very incomplete understanding of what the -- when you say my understanding -- my -- I only understand what I have been asked, so I know that there are issues in dispute with respect to the areas that I cited in my -- in my expert report. There may well be larger issues. I have not read or been given a copy of the claim that has been generated by the plaintiffs.
Q. Uh-huh. Have you ever read the Minnesota statutes that are alleged to have been violated?
A. No, I have not.
Q. Are you here to give an opinion, either in this deposition or trial, about whether the defendants in this case committed fraud?
A. As far as I'm aware, that's not an area in which I'm going to give any expert opinion.
Q. Do you have an opinion in that area?
A. I really don't even know what's being alleged in

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that -- in that regard.

Q. You understand that you're here to give testimony for the defendants?

A. I do. I'm here to give testimony to the Court. That's my understanding. Not testimony for the defendants. I'm being brought here obviously by the defendants, but my understanding is I'm here to give testimony to the Court.

Q. Okay. But you have been hired by the defendants in this case to give --

A. I have not been hired by the defendants.

Q. -- expert testimony?

Who hired you?

A. I'm not hired. I work for -- I'm an employee of the University of Miami School of Medicine. My salary is -- comes from them. They are my employer. I have not been hired by these -- by the defendants.

Q. I'm not going to ask you to tell me any amounts of compensation, but can you --

A. I don't get any compensation. I will tell you the amount. Zero is what my compensation is.

My department will bill the legal firm, the legal representatives for medical/legal consultation. But none of that has anything to do with me. My salary is completely independent of

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that.

Q. So the defendants in this case have a financial arrangement with the department where you work, to the best of your knowledge?

A. They are -- they are invoiced by my department for those services. The consultation I provide.

Q. Can you tell me anything else you know about that arrangement?

A. It's rather standard. We have a -- we --

Q. Don't tell me how much.

A. Okay. Sorry.

I'm a pathologist. My -- we are very, very often involved in medical/legal consultation. It's a relatively ordinary part of the practice of pathology. Our department took the position a long time ago that it was strictly professional income, in the same sort of way that the rest of the practice of pathology was -- where we receive compensation. And, therefore, it was appropriately income for the department and not for individuals. The -- that view actually was adopted about ten years ago by the entire six hundred member medical practice group that I belong to, as part of my department. And we have an established rate that's in our computer system, called medical/legal consultation, and whatever that

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rate is, that's exactly what's being billed. I don't even specify that. I just specify my hours and then the billing office bills the parties that are involved.

And that same rate actually applies as a consultation rate to any consultation that I do. Industrial consultation, or a medical consultation, or whatever else it is, that may be apart from the actual provision of medical care to patients.

So I am practicing medicine today, by the definition of our department. And in my own mind, I will add.

Q. Do you know who your department sends invoices to?

A. Do I know who they send them to? We have over eight hundred clients.

Q. I'm sorry. My question wasn't very precise.

To receive reimbursement for the hours you put in on this case, do you know who the department sends invoices to?

A. Yes. They're sending them to Shook, Hardy & Bacon, is -- is who's being invoiced in this case.

Q. Doctor, would you tell me in your own words why, from your perspective, you believe you're qualified to give expert opinions in this case?

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A. I have a rather -- for the area in which I am providing an expert report, I have rather extensive formal education, which consisted of undergraduate school, four years of medical school, six years of graduate school, three years of residency training, and now almost twenty-five years of practice. All of this has to do with pathology, particularly those particular aspects of pathology that are related to the measurement of causation of disease, the measurement of progression of disease, the measurement of response to therapy. These are areas in which I am an expert. This is what I get a monthly paycheck for.

Q. Thank you.

We'll go into each of those in greater detail as we go along.

A. Fine.

Q. I'm interested to hear about -- more details about your education and your training, but I wanted to just get in your own words --

A. Right.

Q. -- why you felt you were an expert.

Is there anything to add to that?

A. My graduate training, by the way, was specifically in biochemistry, so...

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Q. Is there anything else you want to add?
A. No.
If you -- if you ask me what I am as a person, I'm a pathologist, I'm a biochemist, I'm in particular a clinical pathologist, which is where my specialty boards are. And -- and the area that I have no formal training is actually the area in which I provide most of my service work, and that is with respect to computers and computer services. That's my primary day-to-day responsibility.
Q. When we were growing up there was no formal training in computers, right?
A. There was not.
Q. You've learned it on the job?
A. Yeah. I learned it in graduate school.
Q. I see. But I would guess that it's evolved a great deal since you left graduate school?
A. We were talking about that this morning. And I said that the thing that is very difficult to imagine, in the course of less than thirty years, there's a general rule of thumb--what one dollar today will buy, in 1965 or '66 cost ten thousand dollars. And that's -- that's how much it's changed. Talking about four orders of magnitude in thirty years.

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Q. Yes.
A. Absolutely is incredible.
Q. You've differentiated in one of your answers between pathology in general and clinical pathology. Would you tell me what you mean by that differentiation?
A. Yes. There are several branches of -- of the specialty of pathology. The three most common ones are surgical pathology, or anatomic pathology, where individuals specialize primarily in microscopic diagnoses, rendered by the examination of microscopic examination of tissues or other specimens taken from patients.

There's an area which is called forensic pathology, where the primary requirement of the specialty is a special understanding of medical/legal aspects of death.

And then the third area of pathology, which is clinical pathology, is the area that embraces all of the other ordinary diagnostic procedures that are related to the removal of specimens, non-tissue specimens from patients for the examination and study in the laboratory. Even some tissue specimens are involved in that process. The specific areas are chemistry, hematology, immunology, microbiology, and

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transfusion medicine. These are all major branches of clinical pathology. And it's the areas that I had mentioned are primarily associated with the measurements that relate to the testing for diagnosis, for evaluating the prognosis or the progression of disease, and for measuring the response to therapy.

Q. You listed a number of things. Hematology was one of them. Can you go over those again? I wasn't able to write them all down.

A. Sure.

The major branches in clinical pathology are chemistry, microbiology, hematology, immunology, and transfusion medicine.

Q. Do you work a lot with blood?

A. A lot with blood.

Q. As opposed to tissue samples?

A. Correct.

Q. Does part of your practice as a clinical pathologist involve tissue samples?

A. A very minor part of my practice involves tissue samples.

Q. Is it fair to say, then, that you -- your work -- I don't mean this is all your work, but I'm just trying to characterize your work with the

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blood: It involves getting the blood from the patients, getting it into some sort of machine, analyzing it in some way, and making the results of the analysis available to the physician?

A. Correct. That's a very major part of the practice, yes.

Q. And a lot of that practice has been computerized in the last ten to fifteen years?

A. Tremendous amount has been.

Q. Did you want to add something?

A. I was just going to say -- in the current state of the art medical laboratory or clinical laboratory, the computers basically tell the analyzers which particular determinations to run. The analyzers run the determination, report the results back to the computer system. The computer screens the results. Decides whether or not they require any human intervention and if they don't, reports the results. So there's that degree of automation.

Q. The computer would have built in ranges of normal and if a result is outside the range, then it would --

A. More or less.

Q. -- it would call for further investigation?

A. More or less, yes.

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Q. Tell me about the more or less part.
A. Okay. A -- in an isolated, individual result, which is -- which is being requested simply for screening purposes, exactly what you said would happen. On the other hand, if a patient previously had a very abnormal result and currently has a normal result, that's abnormal. And, therefore, that would require some degree of intervention. So the fact that the result is normal itself, is not in and of itself sufficient to -- to -- to report.
Q. Okay. Thank you.
Would you give me a brief definition in your own words of each of the specialties that you identified, beginning with hematology?
A. Hematology -- the primary determinations of hematology are to measure the two principal -- three principal functions of the blood. And the three principal functions are: One, to carry oxygen to the tissues; the second is to handle infections and responses that require the inflammatory response, which is a healing response in most cases; and the third area is actually clotting of the blood itself, so that in the event there's blood vessels that are injured, the clotting mechanism needs to take over.
Each of those areas is a special domain of

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disease. In addition to that, in each of those areas there's often a response to disease. A typical disease which requires inflammation, and most diseases in some way or another require an inflammatory response for the body to react to the disease process, it's manifested by the kinds of white blood cells that will be seen in an examination of the blood. And so that's a relatively major part of routine hematology.

And, as I had mentioned, there is, in addition to that, of course, the special clotting problems and very often disease either causes a hypercoagulability, or increased proclivity for the blood to clot, or a decreased affect on it.

The -- one of the seemingly unrelated causes for bleeding problems is liver disease, because several of the clotting factors are manufactured by the liver. And so clotting tests sometimes are used actually as a measure of the amount of hepatic function that's available to a person. So there's many, many roles in many, many areas in the area of hematology.

Q. Chemistry, could you give me a brief definition?

A. In chemistry -- many people regard life as a very organized chemical reaction, which is a fair

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approximation. Chemistry then ends up being a tool for understanding exactly how those living processes are functioning. There are a variety of analytes that are measured, where we measure the amount of analyte that's present in blood or other body fluids, as in cerebral spinal fluid as an example, or as in urine, as an example. There are expected concentrations of ordinary metabolites that are required for the day-to-day function of cells.

Probably the easiest one to understand is glucose. Most of the energy that the body derives from metabolism goes through the metabolism of glucose. And -- and there are major diseases associated with glucose, hypoglycemia, relatively uncommon; diabetes mellitus, a very, very common disease, which is associated with abnormal amounts of glucose being present in the blood. And that's just one of the metabolites. There's many other metabolites and many other diseases.

So chemistry basically is a measurement of the metabolic system. Many diseases have specific manifestations with the chemical tests that are -- that are utilized to study the influence of disease, or to diagnose the disease; again, to measure the progression of disease in response to therapy.

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Q. What about microbiology? Again --
A. Microbiology --
Q. -- if you could give us a brief description --
A. The essence of microbiology is infectious disease. And so what we're looking at in microbiology is bacteria, we're looking at viruses, we're looking at fungi, we're looking at protozoans. We're looking at causative elements of infectious disease. We're looking at the response of those particular organisms to antibiotic therapy that may be utilized. And, again, we are looking at diagnosis, we're looking at response to therapy, and we're looking at progression of disease. These are all areas in microbiology, as well.
Q. Thank you.
Now, immunology, a brief definition.
A. Immunology is primarily a measurement of the specialized functions of immune cells, the lymphocytes, and also the seroimmunity or the antibody relationships and the other -- other proteins that are necessary as part of the immune response. And, again, we're looking at diagnosis, we're looking at progression of disease, we're looking at response to therapy as the primary areas of immunology.

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Q. And transfusion medicine?
A. Transfusion medicine is a specialty of pathology, primarily because it requires expertise in the testing of blood. In many respects it's a -- it's a therapeutic branch of pathology, or you can think of it as being a pharmaceutical branch of pathology, because we then have the responsibility of issuing the appropriate blood and blood products that are required for the treatment of patients.
Q. Doctor, I've had marked as Deposition Exhibit 3103 a copy of your expert report. And I'm going to hand that to you.
A. Okay.
Q. Would you just page through it and confirm that this is the expert report that you submitted in this case?
A. (Reviewing document.)
This is my expert report.
Q. Thank you.
And is that your signature on the page -- after page fourteen and before your curriculum vitae?
A. That is my signature.
Q. Your expert report, Exhibit 3103, groups the topics of your report and your testimony into a number of categories, including qualifications, risk

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factors for diseases, causes of diseases, epidemiology, pathology, mechanism of action. Smoking as a risk factor for diseases. Other risk factors.

A. Uh-huh. Yes.

Q. Diagnosis of disease. Misdiagnosis of disease. Bias in diagnosis of disease. And diagnostic codes/ICD-9; is that correct?

A. That's correct.

Q. And just so I'm clear, those are the topics on which you feel you're qualified to give an expert opinion in this case?

A. I -- I believe I am qualified to give an expert opinion on all of those topics.

Q. I'd like you to go through for each of those topics one at a time and tell me in your own words what qualifies you to be an expert witness on that topic. If your answer is the same for every topic, then we don't need to --

A. Okay.

Q. -- go through all of them. But if there's something specific for a particular topic -- I'm not being very clear on how I'm framing this question. I've already asked you generally --

A. Yes.

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Q. -- why you consider yourself to be an expert.
A. Yes.
Q. Why don't you look at each of these topics --
A. Okay.
Q. -- and tell me whether you feel there's something specific to that topic that would add to the qualifications you have as an expert for that topic, beyond what you've already told me generally.
A. It -- I believe that I have special experience and training that may not be so readily apparent in the area of -- of epidemiology and statistics. I believe that I have special insights with respect to what is ordinarily regarded as, quote, science. And, if you will, the philosophy of science, the epistemology of science. Because of the -- my exposure to a fairly wide-range of scientific investigation, specifically with regard to mathematical tools.

I teach laboratory statistics to our residents.

I have written all of the quality-control functions that are part of our clinical laboratory computer system that on a routine basis provides monitoring -- automatic monitoring of the quality of measurements. Laboratory measurements.

I have developed a number of mathematical models

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for understanding the measurement process and then have put those into practice.

And so I think I have -- those are the things that maybe are not apparent, that wouldn't necessarily be something that would follow somebody who had had, say, the medical background, the pathology training that I've had, and the biochemistry experience.

My biochemistry, by the way, involved quantum chemistry, courses in that. Courses in statistical thermodynamics. And so I'm used to some -- the application of statistical modeling in the physical sciences. And I'm familiar with those same tools being used in biological sciences and those tools being used in social sciences.

Q. Social science -- I'm sorry. Social sciences. Biological sciences.

A. Yes.

And physical sciences.

Q. Can I ask you one more time -- I'm not writing as fast you're talking. That's not your fault, that's mine.

But social sciences, physical sciences, and --

A. And biological sciences.

Q. So those are your additional qualifications in

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the area of epidemiology and statistics?

A. Correct.

Q. Do you have any additional qualifications you'd like to tell me about with respect to risk factors for diseases?

A. No.

Q. What about causes of diseases?

A. No, I don't think that I can add anything beyond what I've already mentioned.

Q. Do you include as one of your qualifications regarding causes of diseases, what you've told me about epidemiology and statistics?

A. There's a relationship there, yes.

Q. How do you mean that?

A. Generally speaking, when we use -- in any of the sciences, when we use statistical modeling for whatever purpose, there is an underlying model that we approximate with the mathematical model, where we take experimental data, or sociological data, or whatever the source of the data is, physical measurements, and the model itself presupposes some sort of relationships. And the model itself, then, generates numbers with respect to the degree with which the model corresponds to the data. And that's pretty much true whether or not we're talking about

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the behavior of an electron in the vicinity of a nucleus, or whether we're talking about the causes of marital discord in some sociologist's report, based on some experimental study.

Q. Your knowledge and training and experience in epidemiology and statistics informs your opinion on the causes of disease?

A. It contributes to the understanding, yes. But it doesn't point to cause. Because causation is not part of the modeling process. I mean you can say well the model presupposes causal relationships. It's already built in before you even do the study, as you say, ah, let's see the relationships of this, this, and this. And all the statistics do is say there is a statistical association, there is not a statistical association. It does not -- it does not ever point directly to causation. It can't. I mean causes in terms of -- if you can imagine something like one billiard ball striking the other billiard ball, what is the statistics of that? Okay. Well, you presuppose a model. But the causes of the -- of -- are actually related to Newton's laws of motion, rather than -- rather than the statistics.

Q. The statistics can explain what is going on?

A. The statistics do not explain in the sense of

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item event, consequent. They don't do that. They don't do that. That's not part of what one attempts to do with statistics or with epidemiology, for that matter. If one attempts to do that, then one has a rather limited understanding of the way the world works.

Q. Okay, sir.

Are there any of these other topics beyond the ones that we've discussed that you feel you have additional expertise or qualifications that you'd like to tell me about?

A. I have some special experience with respect to the processes that are normally followed in hospitals, in clinics, with regard to the coding of disease. Part of my professional responsibility is to oversee some of the -- our billing system and the requirements for the generation of insurance claims, et cetera, for reimbursement for the services that our department provides. And as a consequence of that I have substantial experience in various coding systems that are utilized in medicine for not only reimbursement purposes, but for epidemiologic purposes and for research purposes.

Q. Does your department use ICD-9 codes in its billing?

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A. It's required to, yes. Third parties basically require ICD-9 codes. They won't accept other kinds of codes.

Q. Is this special experience you've been describing with these coding issues something that you have specific academic training in? Or is this an expertise you've developed through your work?

A. This is an expertise that I've developed. It's strictly from experience. I have not received any specific education on it. I have attended professional meetings, as recently as a month ago, where a part of the meeting was devoted to coding issues and the complications associated with coding, in the area of surgical pathology, in particular. But the -- most of my understanding of this issue has been acquired through research and experience.

Q. Did you give a presentation at this professional meeting --

A. No, I did not.

Q. -- that you just described?

A. I was just an attendee.

Q. Besides the topics that I've read and that are -- that you've confirmed are listed in your report, are there any other topics that you plan to give an expert opinion on in this case?

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A. I have no plans to give any other testimony.
Q. Have you been asked to give expert opinion in any other topics besides the ones covered in this report?
A. I have not been asked.
Q. And do you intend -- beyond the issue of broad topics, do you intend to give any testimony beyond the specifics that are in this report?
A. Yes.
MR. CURTIS: I'm going to object to the form of the question. That's -- that's vague and confusing.
THE WITNESS: Yeah.
MR. ORENSTEIN: Let me try to rephrase it.
MR. CURTIS: Okay.
BY MR. ORENSTEIN:
Q. In my questions about your report so far I've been referring to the topic categories.
A. Yes.
Q. And the issue areas.
A. Yes.
Q. Your report also has within each topic category, an issue area, specific opinions and basis for those opinions and conclusions.
A. Correct.
Q. Do you intend to give testimony at trial on any

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specific opinions or conclusions beyond those that are expressed in this report?

A. Specifics with respect to generalities that are already listed, yes, I expect to. I think I've already done that today, I believe. I could cite several instances where I've gone beyond what's actually cited in this report in terms of specifics.

Are there any general areas -- if I'm understanding you correctly -- are there any other general areas that are not itemized here, for which I am going to be expected to give testimony? None that I'm aware of at all.

Q. Okay. You may elaborate on what's in the report?

A. This probably is not -- of all the categories of knowledge that I have, this is probably not a completely exclusive list. But none of those other areas I have been asked to provide any -- and, as a matter of fact, I don't think -- most of them, I don't think, are relevant to the issues in this case. But, no, I haven't been asked to provide any -- any information -- expert information beyond these general categories. No. And I don't anticipate that I will be.

Did I answer your question?

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Q. I feel that you did.
A. Thank you.
Q. Without telling me the substance of any conversations with any lawyers, would you tell me how you came to be an expert witness for the defendants in this lawsuit? When I say --
Well, strike that.
I don't want you to tell me about the lawyers' opinions about anything in this case, or their ideas about your expert report, but I do want to know at this point how you came to be contacted by them and the details of the circumstances surrounding those discussions.
A. I will -- perhaps eight months ago, six to eight months ago, I was notified by -- by the chairman of our department that some lawyers had contacted him and that they were interested in obtaining some expert information with respect to the medical coding issues. And he said that he felt as though that I would be in a much better position to provide any consultation in that area, than he would be. And so he referred them to me. And I got a call from Clyde Curtis and Susan Carchman and we met and discussed coding issues, coding practices, et cetera. And in the course of those discussions and issues related to

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that discussion I expressed a number of informed, if not expert opinion. And I was asked if I would be willing to testify to the -- as an expert witness to the things -- to issues that I had brought up in that meeting. And I said that I would be willing to.

Q. How many times did you meet with the counsel that you've named? Before --

A. Half a dozen.

Q. I'm sorry. Let me be more specific with my question.

Before you agreed to become an expert.

A. Oh, I think a couple of times.

Q. Were those meetings in Florida?

A. Yes, they were. In my office.

Q. How long were each of those meetings?

A. I think around two -- two hours, probably. Two to three hours.

Q. Was anybody present besides the two lawyers --

A. No, there was not.

Q. -- that you named?

At either meeting?

A. No.

Q. Were --

A. All of our meetings have been private.

Q. Were you asked to give any expert opinions in

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any areas where you declined?
A. No, I was not.
Q. Now you said they first contacted you -- first contacted the department chair?
A. Uh-huh.
Q. And then contacted you because of the desire to learn more about issues of coding?
A. Yes.
Q. Can you tell me how your report evolved from issues of coding to the additional issues that are listed in your report and that we've discussed today?
A. I think it was a rather natural progression. The issues of diagnosis, in general, and the relationship of diagnosis to the coding of diagnosis. I expressed my understanding of that process, including the definition of the process, the definition of disease. What I regard as the state of the art in medical understanding of disease. The mechanisms of disease. And then -- and then the inadequacy with which we ultimately distill that into -- into numerical codes.

The idea of using mathematical representation for certain kinds of information. I expressed a number of views with respect to this. I expressed -- explained about areas of active research that were

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occurring in medicine related to these particular issues. And a number of the -- a number of the specifics that were cited were those related to various disease processes that are included in here.

And so I think it was a natural progression. I expressed, I think, special insight, understanding, regarding those issues. And the -- and at some particular point I was asked whether or not I would be willing to testify to those areas and I said I would.

Q. What was the ongoing research that you identified in those areas?

A. The research was -- this may seem a little bit far afield, but I feel like it's relatively intensely related, is -- relates to the codification of -- of human thought in computer systems.

There are a number of projects beginning in the '50s, continuing to the present day, that are under the loose umbrella of our artificial intelligence, particularly with respect to language. And -- and as a person who has major responsibilities of computer systems, including coding systems, and including automatic encoding of medical information, it's an area in which I expressed my views as to the state of the art and the likely progress for the next few

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years.

Q. What are your views on that?

MR. CURTIS: Objection to the form of the question. Overly broad and general.

BY MR. ORENSTEIN:

Q. What are your views on the state of the art and the likely progress in the next few years in the area of artificial intelligence?

A. I think that we're going to -- there's a huge -- there's a huge project that's beginning to scope out the magnitude of the problem. I think we're going to understand the magnitude of the problem. I think that we're going to develop some additional tools with respect to attacking the problem. And I think that probably we will see a continued evolution of progress. There's been a considerable amount of progress in the last thirty, forty years, on these issues. One of the more interesting ones is the language to language translation problem, which is -- which by -- almost by definition has to embody some understanding of the fundamental issues of encoding human information.

So I -- there will be continued progress. I don't expect any revolution in this area.

Q. You don't believe that computers can actually

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understand human language in the same mechanism that humans understand it, do you?

A. This is a -- this is a -- as you may be aware, or maybe not aware, this is a famous problem that actually goes back to the 1950s in terms of its original definition.

There was a British mathematician by the name of Alan Turing who posed this particular problem and who also posed a solution to this particular problem. And interestingly enough it was more or less a statistical one, that -- in one of its simpler forms is -- is -- if I had a person who asked, not knowing who they were asking--a computer or another person--for a response, and if that person was unable to tell whether a computer or another person had responded, would the computer have demonstrated its ability to, quote, think? And the likelihood is that within limited frames of references, that computers will pass the Turing test in fairly short order, in the next few years.

On the other hand, I think it's going to be a long time before you can ask the computer a question of what do you think I should do about my marriage? And for it to give very useful answers.

Q. But you don't believe computers actually think

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in the same mechanisms or processes that humans use, do you?

A. I don't know which the mechanisms are that humans use.

Q. But to the extent that a computer is able to demonstrate artificial intelligence, a computer is replicating observations about human behavior; is that correct?

MR. CURTIS: Object to the form of the question. That's confusing.

BY MR. ORENSTEIN:

Q. You may answer.

A. I'll answer the question in that I think that it's possible the computer is going to pass the touring test, within a limited frame of reference. Exactly whether -- they won't be using the same mechanisms that humans use. No question they'll be using different mechanisms. But will the mechanisms be distinguishable? I'm not sure that they will be distinguishable.

I think we'll understand a lot more, by the way, about the process of conception, ideation, thinking, memory, et cetera. I don't think we'll understand a lot more about the brain and the way it works over the course of the next several years.

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Q. But it's not important for you to know exactly how the computer is doing that, or how the human brain does it, in order for you to observe that there is comparability between what those statistical -- between what the computer is doing and what humans do?

MR. CURTIS: Objection to the form of the question. Confusing.

BY MR. ORENSTEIN:

Q. You may answer.

A. You can build two different machines that can -- that can perform precisely the same task in radically different ways. It's very likely that, however, computers actually solve problems, provide very human-like intellectual power, functions. It's going to be radically different than the way -- than the way the human mind works. The human brain works.

Q. Dr. Wunsch, why did you agree to be an expert witness in this case?

A. I expressed my views, as I had mentioned earlier. I was asked if I would be willing to testify. I said, yeah, I'd be willing to testify. I -- I feel as though there is -- I have a fundamental problem with -- on a completely personal basis, personal philosophy, what's happening in our

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legal system. And so I guess what I'm saying is I agreed to testify because I protest what's happening.

Q. And what is it about what's happening in our legal system that you're protesting by virtue of your agreeing to be an expert in this case?

A. I don't believe this suit -- I don't think the courts are an appropriate jurisdiction for settling certain societal issues, including this suit.

I think that what's happening in this suit is a gross misrepresentation of science. I think what's happening in this suit is a gross misdirection of elements of our society, who are going to possibly misapply information.

Q. Why don't you think that the courts are an appropriate jurisdiction for settling the issues that are brought forward in this suit?

A. As I understand them, I'm going to qualify, because I haven't even read the suit, per se. What I'm -- I responded -- my willingness to testify based on probably more of the issues that were raised in the state of Florida, which I'm much more familiar with. And when -- and I thought that's probably where I would be testifying, would be in the state of Florida, because I was a little bit more familiar with the day-to-day stuff that was in the newspapers,

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et cetera, my understanding of the issues that were brought there.

I am very concerned that we are becoming more and more a litigious society. That we haven't learned mechanisms of resolving societal disputes in a format that I think is a lot more conducive to -- to the general welfare of our society.

And -- and so I -- I oppose the idea that somehow or another a state can say, oh, we're going to sue this company because we can put together some sort of bases of a suit. And we can invent a new law, in the case of Florida, which enables us to sue somebody.

I look at smoking as -- as a volitional act, and I look at that as -- as one that involves informed opinion and the -- and the information associated with it extends to the legislatures of this country. It extends to the court systems of this country. And I think it's a charade what we're going through.

Q. Why do you think it's a charade?

A. There is the pretenses in -- that I read, not specifically with respect to Minnesota. I'll make that disclaimer. But certainly in the case of Florida, that -- you know, the state is alleging that it -- it's surprised -- my God, it just discovered

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all of a sudden that tobacco may have some negative influence on health. And, gee, we need to punish somebody for that. I'm not exactly sure how the state could have been so ignorant and our legislatures -- our legislators could have been so ignorant over all these years.

Doesn't anybody read the newspaper any more?

Q. So you believe that tobacco has a negative impact on health?

A. I think that -- that tobacco poses -- that there are risk factors that have been isolated with respect to tobacco use. And I think that those risk factors are -- are elements that people need to use in their conduct of their daily life. That's what I think they are. The same way we use risk factors for everything else in our daily life.

Q. You were offended that the state attorney generals bringing these lawsuits allege that they're somehow surprised that tobacco has a negative impact on health?

A. I mean it appears from the suits that there's been a sudden discovery by the states. The states that have been taxing tobacco for years and years and years. Been raking a bunch of income in. Ultimately doing whatever states decide to do with the income

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they have been taking in. And then all of a sudden saying, "Oh gee, you know, there have been some negative influence on the state's coffers because of tobacco" -- is alleging, and "Gee, let's take it to the court and see if we can steal some of that money back."

Q. But you were offended by what you called a charade, that --

A. I think it's an enormous pretense. I don't see how a state can allege the things that they're alleging. I mean where have these people been? In coal mines for the last fifty years?

Q. So your view is that states knew that tobacco had an impact --

A. Of course they knew that it had an impact.

Q. Your view --

A. They've known it forever.

Q. I'm sorry, Doctor, --

MR. CURTIS: Let him ask his question before you answer.

THE WITNESS: I'm sorry. Excuse me. I apologize.

BY MR. ORENSTEIN:

Q. Your view was that states knew that tobacco had a negative impact on health?

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A. Yes.
Q. And that's your view, too?
A. What do you mean that's my view too?
Q. That tobacco has a negative impact on health.
A. I had expressed my view. I think that there have been risk factors, which have -- which have -- which have been demonstrated with respect to tobacco use, as well as lots of other things in our daily lives. And that it -- and that people need to utilize those risk factors with respect to decisions about how they conduct their lives. And I think that's the way the system should work.
Q. Do you or do you not ascribe to the view that you just attributed to the states, that tobacco has a negative impact on health?
A. I believe that there are areas in which -- in which -- in which there is the potential -- sufficient potential for -- as an example -- okay. I know that my risk of dying, whether I wear my seat belt or don't wear my seat belt changes. And it changes very significantly. By at least a factor of two. All right? Now, whether I decide to wear my seat belt or decide not to wear my seat belt on this occasion or that occasion is something that I decide. I normally wear a seat belt. All right.

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Given a lot of the information which has been collected with respect to smoking, do I think that it would be prudent for some people to limit the amount of smoking? Yes, I do think it would be. Do I think that it would be prudent for some people to stop smoking? Yes, I do think it would be.

Q. Do you agree personally with the view that you said that the states should have had, which is that tobacco has a negative impact on health?

MR. CURTIS: Objection to the form of the question. Asked and answered.

MR. ORENSTEIN: Well, he hasn't answered whether he agrees with it. He's given me another answer.

BY MR. ORENSTEIN:

Q. Yes or no.

A. I feel that the states had enough information and have had enough information and have had no significantly new information with respect to the role of smoking and health factors to have adopted appropriate public policies for the last forty years. And I think that it's outrageous that at this particular time the states have decided, oh, we've just discovered this and now we're going to take them to the courts and sue.

Q. Do you believe the states have known for a long

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period of time that smoking causes disease?
A. The states have known for a long period of time exactly what I stated. That there are risk factors associated with -- with -- with tobacco use.
Q. Okay. So you don't believe that the states have known for a long period of time that smoking causes disease?
A. I don't know whether they know that now. Do they know that now? I haven't read that. I haven't read the state saying that we now know -- we have finally come to the conclusion after forty years that smoking causes disease. I haven't read that.
Q. You don't have an opinion on that?
MR. CURTIS: Objection -- objection to the form of the question. That's vague and ambiguous.
BY MR. ORENSTEIN:
Q. You don't have an opinion on whether the states have known for a lengthy period of time that smoking causes disease?
A. I don't have an opinion on that.
But the states have known for a substantial period of time that smoking poses health risks. Okay? That's enough information to formulate public policy.
Q. And, Doctor, which forum would you believe is a

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better forum than the courts for addressing the question on whether companies have violated state consumer protection laws?

A. If you're looking at laws and the violation of laws, then -- then I'm -- then probably the appropriate jurisdiction is the court.

Q. But it's your belief that the issues that are at stake in these lawsuits are better resolved in the political arena?

A. I think that they're best resolved at the individual level.

I think that to the extent that our -- that our legislatures -- to the extent that our governmental systems assist people in an understanding of everything that can have positive and negative influences on the population's health, they have an obligation to do that. And I think that the states have done a very, very poor job of that obligation.

Q. And that's part of what motivates you to be an expert witness here?

A. Yes. That may sound a little quixotic, but yes.

Q. Do you think it's quixotic?

A. I wonder.

Q. Doctor, I've been asking you some questions about the circumstances in which you agreed to become

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an expert. I want to talk for a few minutes about what happened once you agreed to become an expert--the conversations that you had with counsel, the process by which your report was drafted and finalized. Again, I don't want you to tell me any of your attorneys' substantive ideas or theories about the case.

Can you start by telling me from the point you agreed to become an expert how many times did you meet with counsel before July 1st, which is the date of Exhibit 3103?

A. I don't know. Four to six times.

Q. And each time you met was that in Florida?

A. Yes, it was.

Q. Each time you met was it with Mr. Curtis --

MR. ORENSTEIN: And I apologize, I forget counsel's last name.

MS. CARCHMAN: Carchman.

BY MR. ORENSTEIN:

Q. Was it with Mr. Curtis and Ms. Carchman?

A. I believe so, on every occasion. There may have been one time when I met with Mr. Curtis alone. I met with Susan once alone, as well.

Q. In any of these meetings between the time you agreed to become an expert witness and the time your

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report was submitted, were there any -- was there anybody besides Mr. Curtis and Ms. Carchman who were present?

A. No, there was not.

Q. I mean to include you, also.

A. No. I understand that.

Q. Sometimes we get too narrow with our questions.

A. (Laughter.)

Q. When you met did you discuss what would go into your expert report?

A. At the point at which I had agreed to testify, the -- I had expressed a large number of views with respect to my understanding of some of the issues that are raised in general with respect to the -- the tobacco suits, not, again, specifically the Minnesota suit. And the idea of -- I wasn't aware of that, it was necessary to draft a report associated with those particular views. I was told that if I were to testify that a report would be necessary. And -- and I said you have my views on the matter. And I said do you want me to draft it? And they said that they would be willing to --

MR. CURTIS: I'm going to instruct the witness now that -- to remind the witness that in terms of communications between the various attorneys that met

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with him from time to time and the witness, as well, that those conversations are privileged and he shouldn't go into them.

MR. ORENSTEIN: Okay.

MR. CURTIS: To the extent that we're talking about pure mechanics of how he came about to be a witness, of course you were making that inquiry and you may continue.

MR. ORENSTEIN: The mechanics of how the report was drafted?

BY MR. ORENSTEIN:

Q. With counsel's admonition in mind, --

A. Yes.

Q. -- I'm not sure whether it was an instruction or an admonition, but he'll tell you if you're out of bounds. Again, --

A. Yeah.

Q. -- I've tried to set the parameters myself.

Why don't you go on and tell me about it.

A. I said that there would be areas in which I would feel very comfortable in providing expert testimony. I enumerated the areas. I had already mentioned a number of the specifics with respect to those particular areas. And notes were taken by -- by counsel. Copious notes on all occasions. And

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the -- the issue with respect to -- to drafting it, I'm going to defer any further questions. But I will say this: That there were a couple of iterations associated with the ultimate development of a report and -- and I felt very comfortably by the time that the report had concluded that it was a fair and accurate assessment of the areas in which I could testify.

And it says here report of Christian D. Wunsch. Okay. It is.

Q. I understand that it's your report and I didn't suggest otherwise.

A. Okay.

Q. I'm merely inquiring into the circumstances, --

A. Okay.

Q. -- as has been the inquiry with all the experts --

A. Understood.

Q. -- about how the report came into final form.

Did you write the first draft?

A. As I said, I dictated parts of it that I -- that -- primarily those parts subscribing boundaries with respect to my testimony. And so, yeah, I contributed substantially.

Q. I was speaking about the first draft and is that

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what your answer was referring to?
A. Correct.
The changes that occurred --
Q. I'm sorry.
A. I'm sorry.
Q. Let me just go on.
Am I correct that the first draft was formulated in this method: That you dictated what you thought was the boundaries, and then counsel supplied the text?
A. I think the -- hopefully there was quite a bit of literal text that was taken. In the -- in the areas that -- specific areas, yes.
Q. There was --
A. I know that there's literal text from our discussion.
Q. There was literal text taken by whom?
A. From the notes. Counsel's notes.
Q. And that counsel then put the first draft together based on the information you've described?
A. I received the first typed report. I did not put this in my word processor.
Q. Do you know who put together --
A. No, I don't.
Q. -- together the first draft?

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A. I don't actually -- I believe -- I believe -- I believe Miss Carchman probably made significant -- strung together the English. Strung together the thoughts that have been expressed.

Q. So when a first draft came to you it was -- in your mind, included your thoughts, but it was not produced by you? Is that accurate?

A. Most of it I felt as though it was produced by me.

I mean when I read the report, and in the first go at it, I thought this is pretty damn good. This is really pretty close to exactly what I've been saying all this time.

Q. You didn't physically put that draft together?

A. I did not physically put the draft together. I did not arrange the sentences one after the other. That's correct.

Q. I understand.

And then did you have a discussion about the first draft with counsel?

A. Yes.

Q. Did you suggest to counsel things that you thought needed to be revised?

A. There were a number of changes that were made. Probably the total text that was changed was less

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than 20% of the total text. Most of it was more accurate semantic representation of my views. And some things that I felt could -- could state the view more clearly. There were a number of minor corrections of that type.

There was not anything added with respect to other opinions by counsel at any time from that point on. All the changes that were made were changes that I made. And that was...

Q. Between the first draft that you were provided, and the final version, which is Exhibit --

MR. CURTIS: 3103.

BY MR. ORENSTEIN:

Q. -- 3103, --

A. Uh-huh.

Q. -- would you say that there were substantial changes or minor changes?

A. Minor changes. Like I say, probably the total amount of the text that was changed was probably less than 20% of the total text. And most of that was a matter of clarifying -- stating things more clearly, stating things more accurately.

Q. Which areas did you suggest changes in?

A. Oh boy.

MR. GINDER: Counsel, I believe that they're

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still under discussion -- maybe it's a disagreement between the two sides yet about substantive changes to drafts. And until I hear what the results of that Meet and Confer were, or if there was a resolution of that problem, I believe it's been consistent on both sides. But we would take the position that substantive changes between drafts are not part of the inquiry today. But I'll also be checking back on that during the break.

MR. ORENSTEIN: Mr. Ginder, without giving you my own view on this, since I'm uninformed, I'll just defer those questions until later.

MR. GINDER: We can take them up later in the deposition.

MR. ORENSTEIN: Thank you.

BY MR. ORENSTEIN:

Q. Was there -- were there any other drafts between the first draft that we've been discussing and the final product, which is Exhibit 3103?

A. My recollection is that it went through two drafts.

Q. Okay. So after the first draft that we've been discussing, changes were made, and then you made additional comments on that before that version became the final version? Have I stated that

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correctly?
A. No, I don't think you have.
Q. Okay. Please tell me.
A. Okay. There were two -- my recollection is there were two drafts. We had the first -- we reviewed the first draft. I suggested a number of areas that I felt -- and I had some specific -- some specific suggestions in areas that would make the report clearer and state the case more accurately. And then I got a final draft, where there was some cosmetic changes made, that I made. And that were incorporated. Everything -- everything that I changed was changed.
Q. So there was a first draft, a second draft, some cosmetic changes, --
A. Yeah.
Q. -- and then the final version?
A. That's my recollection.
Q. Thank you.
You don't remember any substantive changes between the second draft and the final version?
MR. CURTIS: Well, on that question -- that relates back to the concerns that were voiced by Mr. Ginder.
MR. ORENSTEIN: I wasn't asking what those

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changes were. I was asking whether there were such changes.

THE WITNESS: I don't think that there were. I referred to them as cosmetic. I mean that. Okay?

BY MR. ORENSTEIN:

Q. Did -- I think you told me this, but if I didn't hear you right, please tell me: Did counsel incorporate all the changes that you suggested?

A. Yes, they did.

Q. So between the first draft and the second draft, counsel took your suggestions, came back to you --

A. Not my suggestions, my changes.

Q. Then counsel incorporated those changes into the second draft?

A. That's correct.

Q. And then forwarded that draft back to you?

A. Correct.

Q. And then you made some cosmetic changes, which counsel then incorporated into the final report?

A. That's my recollection of the sequence of events, yes.

Q. And that final report is the report that is --

A. That's correct.

Q. -- is Exhibit 3103?

A. That is correct.

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Q. And the report that has your signature?
A. Correct.
Q. We've been going a while. Do you want to take a break? I'm glad to keep going. Typically we break about now.
A. I'm -- whatever you'd like to do is okay with me.
MR. CURTIS: Short break.
MR. ORENSTEIN: Okay. Counsel, do you want to take a short break?
MR. CURTIS: Five minutes. Hit the coffee machine.
(Recess taken.)
MR. ORENSTEIN: Back on the record.
BY MR. ORENSTEIN:
Q. Dr. Wunsch, before we took a short break we were discussing your expert report and how it came to be a final product and I want to ask you a few more questions about that.
MR. ORENSTEIN: First let's mark this.
(Exhibit 3106 marked for identification.)
BY MR. ORENSTEIN:
Q. You can just hold on to it. We'll be using it again.
A. Okay.

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Q. Dr. Wunsch, I'm handing you what's been marked as Deposition 3106. This is a two-page document, which are the last two pages of a Court Order dated March 13, 1997, regarding expert witnesses.

Do you remember ever seeing these two pages before?

A. I do not recall seeing these pages.

Q. I'd like to just walk you through part A, which says REPORTS. Says -- number one: "For each expert, at the time of designation of such expert and notice to the opposing side, the designating party shall provide: a) a full and complete report prepared and signed by the expert setting forth the subject matter on which the expert is expected to testify, and setting forth the substance of the facts and opinions to which the expert is expected to testify and a summary of grounds of each opinion."

Is it your understanding that the report that is Exhibit 3103 complies with that paragraph A which I just read?

A. I believe it does comply with that requirement.

Q. It is a full and complete report in your opinion?

A. It is a full and complete report.

Q. Paragraph A says it should be prepared by the

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expert. To your understanding that you complied with this requirement by virtue of the discussions that you had with counsel that you've previously described?

A. Correct. More than discussions that I described.

Q. What would be the more than?

A. The more than was when -- when I was told that a report -- that I -- I felt as though I provided an outline of the particular items and an organization for it. And then I'd already provided a very large number of -- of views and opinions within each of those areas that had been dutifully recorded in the course of our meetings.

Q. Does this --

A. And I -- and it was representative of those -- of my wishes.

Q. Thank you.

Does your report -- continuing to read from paragraph A. Does your report set forth the substance and facts of opinions to which you are expected to testify and a summary of grounds of each such opinion?

A. Yes, it does. I think we have perhaps added to that in our discussion today with questions that

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you've asked. But in a general sense, absolutely.
Q. Does your report, looking at letter B, contain a current and complete curriculum vitae?
A. Yes, it does, to the best of my knowledge.
Q. Let's look at the last several pages of Exhibit 3103, which is your curriculum vitae. Is this the curriculum vitae which you believe complies with paragraph B of this Court Order?
A. Yes.
Q. Did you prepare this curriculum vitae?
A. I did.
Q. This is something that came out of your word processor?
A. Yes, it is.
Q. Did you submit it to the defendants for inclusion in this report?
A. Yes, I did.
Q. To your knowledge is there anything on here that was added by anybody other than you?
A. There is not anything that was added by me.
Q. To your knowledge is there anything that you had on the CV you submitted to defendants' attorneys that is not included in what's in the CV in this report?
A. There is not.
Q. Thank you.

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The date on this CV is March 11, 1997. Was this CV current and complete at the time you submitted the report on July 1st?

A. Yes. This was -- this was -- yes. This was a CV as of that date and I think it's also accurate for July the 1st.

Q. Is there anything, sitting here today, that you would want to add?

A. There's nothing I can think of.

Q. Subparagraph C of the Court Order, continuing on, requires a listing of all publications of the expert.

Are the publications that you've listed on the second, third, and fourth pages of the CV section of Exhibit 3103 all of your publications?

A. To the best of my knowledge.

Q. Going to subparagraph D, the Court Order requires a listing of all matters in which the expert has testified by deposition, at legislative or administrative hearings, or at trial, and the dates thereof.

On page fourteen of your report there's a page entitled, "Prior Testimony"?

A. Correct.

Q. Did this page come out of your word processor?

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A. Yes, it did.
Q. And is this your best recollection of all matters in which you've testified by deposition, at legislative or administrative hearings, or at trial?
A. To the best of my recollection, this is an accurate statement.
Q. Okay. But I'm not asking whether it's an accurate statement. But is it -- is it your best response to subparagraph D --
A. Yes, it is.
Q. -- of Exhibit 3106?
A. Yes, I think I have complied with that.
Q. Recognizing that you are going by memory, rather than referring to detailed records, is there anything else you've remembered that would be responsive to subparagraph D that is not included in this page fourteen?
A. I'm not aware of anything that is missing.
Q. Sometimes people just think of something. That hasn't happened to you on this issue?
A. Honestly, I haven't thought more about it --
Q. Okay.
A. -- after I put this down.
Q. Going to paragraph E, a listing of all principal treatises, articles, or documents relied upon in

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support of your opinion.

Are those the references listed on pages twelve and thirteen of your report?

A. You know, the word here relied -- I think that it is an adequate representation. I think it would be absolutely impossible for me to provide an exhaustive list of all of the sources of information that I am relying upon for my testimony. I think it would be impossible for me to comply with that. In a full and complete disclosure of any source -- any article, any text, it would be relatively extensive.

Q. But you did rely on these references --

A. Yes.

Q. -- listed here?

A. Yes.

Q. And there was -- these are textbooks or articles that you actually physically reviewed --

A. Yes.

Q. -- as the report was put together?

A. Yes.

Q. Understanding that you've probably read thousands of articles in your lifetime, and that knowledge base contributes to the information you rely on any time you express an opinion, and that it's impossible to identify each article, I

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understand --
A. Yeah.
Q. -- I think I understand what you were trying to say; is that what you were trying to say?
A. Yes, that's what I was trying to say. Accurate representation.
Q. Are there any other general reference textbooks or articles that you specifically reviewed in putting together this report, beyond the ones that are listed on pages twelve and thirteen?
A. No, there are not.
Q. You did review these?
A. I did.
Q. And you relied on them?
A. Yes.
Q. Now. How -- well, let me just ask you: For the general reference textbooks, do you have those textbooks in your office?
A. No, I do not. I have a -- I have an older version of Harrison and I don't have DeVita's text in my office.
Q. How was it that you came to consult with those two textbooks, Harrison and DeVita, and the editions that are listed here in preparation for this report?
A. I'm not exactly sure whether it was suggested,

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or whether there be an additional set of references, as general references in the area of oncogenesis. And -- but one of the more popular texts in that area is DeVita's text. And -- and so it got listed as a text there. I could give you others, as well.

Q. Okay. But you testified that you did specifically review Harrison's --

A. I have reviewed parts of both as reference works.

They really represent reference tones, because they cover a very, very large area of information. And in both of those I have -- I have read parts of them and digested parts of them. And relied upon parts of them.

Q. And I notice that you break down some of your references by virtue of particular issues. You list thirteen references on issues of misdiagnosis and diagnostic bias.

A. Correct.

Q. And four issues -- I'm sorry -- four references on the issue of miscoding.

Is it fair to say that the editions of Harrison's and DeVita, which you listed as general reference textbooks, were references as to the other issues in your report?

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A. That's correct.
Q. Were they also references as to the misdiagnosis, diagnostic bias issues --
A. They were not.
Q. Were they also references as to the miscoding issues?
A. No, they were not.
Q. And did -- did counsel suggest that you review those --
MR. CURTIS: Again, we're getting pretty close -- if not at the point of talking about substantive issues that were the subject matter of discussions between counsel and the witness. And to the extent that we encroach that territory, I'm going to have to instruct the witness not to answer.
MR. ORENSTEIN: Okay. Thank you. Let me try to phrase it another way.
BY MR. ORENSTEIN:
Q. I believe you testified that those two general reference textbooks are not kept in your office?
A. That's correct.
Q. So you --
A. Although I do have a version of Harrison's, which is not the same version cited.
Q. So you had to physically be provided with those

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by somebody in order to review them and rely upon them in your report?

A. No. No.

Q. Okay. How did --

A. Those are general texts. Okay. You know, they could have -- we could have used Cecil, we could have used Knowles. We could have used a lot of other texts to cite as general reference material.

I think that there was a requirement that we provide something of some general reference material. And my understanding is it was in response to that.

Q. How physically did those editions come into your possession?

A. I -- we have a reference section in our medical library. I pick up reference works there all the time, a whole bunch of texts. Reference texts that are there. So that's one of the places in which I encounter them.

We actually have a departmental library, where I refer to texts.

And then I have my own very small personal library. And you had asked me the question whether either of those texts -- the DeVita text isn't there, but an older version of Harrison's text is.

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Q. And as to the -- the articles that are listed on pages twelve and thirteen, are those articles that you yourself knew about and selected as references for this report?

A. One of the things that happened was that I -- in the course of -- in the course of our discussions I have -- this is not an area in which I collect and index articles. Okay? I have certain areas in which -- more active areas of research and whatever where I -- or actual practice, where I actually collect articles and index them and whatever else it is.

I had encountered a number of those references that are cited there. And one of the things that I had asked, when I was -- when we were going to formulate an expert report -- I said, you know, "If there's any information which you may have," -- because counsel is involved in these -- in a lot of the litigation -- "that you would like for me to read and express an expert opinion about, I'll be happy to read it." And these are articles that I have read. And they are representative of -- of my views in terms of what they purport.

Q. So you asked counsel to provide you with articles and they did?

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A. That's correct.
Q. And those are the articles that are on pages twelve and thirteen?
A. Those are some of them, yes.
Q. Are there other articles that you asked counsel to provide you that you --
A. There may be others --
Q. I'm sorry. Let me finish.
-- that you reviewed, that are not listed on pages twelve and thirteen?
A. I'm not aware of that.
MR. CURTIS: Objection to the form of the question. Asked and answered.
BY MR. ORENSTEIN:
Q. I'm sorry, I didn't hear your answer.
A. No. There are not other articles.
Q. I thought I heard you say that these are some of the articles that you were provided.
A. I -- there -- if there's any other articles, the other articles were equally representative in terms of what they purport. I'm not -- I have not -- again, what I went over, information that -- either on my own, from references that I encountered, or perhaps articles that were referred for my review by counsel, I didn't keep an exhaustive list of all of

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those. So is it possible that there were some articles? Yes. Is it possible that there were any articles that I have deliberately excluded in terms of references? No, there are not articles that I have deliberately excluded in terms of references. But it is altogether possible that there are other articles. As a matter of fact, there are most certainly other articles that I have reviewed in the course of this.

These articles are very representative. I think of the things that I'm willing to testify -- not willing to -- but things that I will testify, that I am testifying on, at this procedure, they're representative of the views. They are part of the literature related to the topics. Again, I -- this is not -- this doesn't approach -- doesn't approach an exhaustive listing of material in this area.

Q. I understand.

There are many things you read and incorporate into your knowledge base. But all the Court Order requires in this suit now, subparagraph E, is a listing of all principal treatises, articles, or documents relied upon by the expert in support of your opinion.

A. Right.

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Q. It doesn't ask for anything you may have ever read. So --

A. But I mean even those that I relied on -- again, if you go back to that word, okay? We're talking about an enormous database that I rely on, some of which I don't have specific recollection. Some of which I'd have to do research to find. I've wasted a lot of my life by the way attempting to do that, when I need to find a citation for an article that I'm writing. Where did I find that? Where did that come from.

Q. We've all been there.

A. Yeah, isn't that true? Certain opinions -- where did that come from?

Q. Sure.

But are there any other principal treatises or articles or documents that you reviewed specifically in the preparation of this report that you relied on in support of your opinion that are not listed on pages twelve and thirteen?

A. I'm -- I'm -- I don't know how I can answer that question more accurately than I've already done it.

There are undoubtedly innumerable, additional articles, specific entities that I have relied upon for my informed expert opinion. Okay? And I'm --

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like I say, there's no way I could comply with the notion -- with the word rely. Okay?

The question is: Have I deliberately excluded any articles that -- that -- because they are not consistent with my -- with my informed opinion? Or have I -- have I -- have I included unrepresentative articles of my views? The answer to both of those questions is no. Okay?

Q. Again, I'm trying to be more specific, understanding that you can't possibly list everything --

A. Yeah.

Q. -- that has ever entered your brain.

Is there any treatise or article that you specifically reviewed in the preparation of this report that -- not that you may have seen at some time, but that you specifically reviewed in preparation of this report and that you relied on in support of your opinion that is not listed on pages twelve and thirteen?

A. Yes. Okay. Let me just say the Miami Herald, both the Spanish and English editions, from probably March to the current time. And in addition to that, the Wall Street Journal and the New York Times.

And there's several -- there are several medical

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journals that I receive and that I review on a continuing basis.

Q. Which are those, sir?

A. New England Journal of Medicine. American Journal of Clinical Pathology. Science. Scientific America. These are journals that I either subscribe to or regularly acquire. And I was exposed to all of that during this interval of time.

And were there any articles in there that were -- yeah.

Q. Okay.

A. Television programs. I mean I watch the news on a regular basis. I watched the news last night. There were articles on the news last night that related to these issues.

Q. Do you have in mind a specific article from any of the journals that you've just described that you specifically reviewed in preparation of this report and relied on in support of your opinion?

A. There are no additional articles that provided information beyond what is -- what I was prepared to testify to.

To a very large extent the substance of my -- of my expert opinion, is formed where -- these articles represent a very, very small fraction of that total

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opinion. But they're all representative of the actual views that are being expressed.

Q. I understand what you're saying.

A. Okay.

Q. Going back to the general reference textbooks, you testified that you relied on those for the areas of your report and the issues in your report other than misdiagnosis, diagnostic bias issues, and miscoding issues; correct?

A. Correct.

Q. Is the DeVita textbook a reliable source of information on the issues covered in your report?

A. It's a reliable sense of information in the sense that it represents a reference work. Okay? I have yet to ever find a reference work that didn't have the -- that wasn't unreliable in some respects.

Q. And is the Harrison's textbook a reliable source of information?

A. Again, from the same view. It's a reference work. It's composed of multiple authors. Some sections are extremely well written. Some sections are not so well written. Some are extraordinarily authoritative. Others are minimally authoritative.

Q. But you considered it reliable for issues that --

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A. It's a good reliable text, okay? Would I recommend it for a medical student to buy? Yeah.
Q. Have you, in the course of putting your expert opinion together, seen any of the documents produced in discovery by either side of this lawsuit?
A. Yes.
Q. Which documents?
A. I have been provided copies of -- of plaintiffs' expert reports. I think a fairly complete listing of those.
Q. Did you review those reports?
A. I did.
Q. I'm sorry?
A. I did, yes.
Q. Okay. There are a lot of them. I would be amazed, even for somebody of your skill, if you have been able to review all of them. Do you remember --
Can I ask you about some specific ones?
A. Sure.
Q. Do you remember reviewing the report of Dr. Jonathan Samet?
A. I do.
And there was actually one that he wrote with two other authors, in addition to a single report.
Q. Okay. Again, there may be some confusion. But

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I believe Dr. Samet submitted a report on his own and then Drs. Zeger and Wyant and Miller submitted a separate report. Does that refresh your recollection?

A. There may -- for some strange reason I thought Samet's name was also on that report. But if it wasn't, then it wasn't. Okay?

Q. These are the kind of details that aren't expected to be fresh in your mind.

A. Yeah.

Q. So let me just mark these, as long as I've referred to them.

A. By the way, I requested those reports. They were not automatically provided to me by counsel.

MR. ORENSTEIN: Counsel, I'm going to have marked the substance of those two reports I've just referred to. I'm not going to have marked the entire report and every calculation and all that that was attached. They have been previously marked as exhibits in their entirety when each of them was deposed. What I'm having marked will have on it deposition exhibit, but it's not the entire exhibit.

So do you have a preference whether we should remark them, understanding it's not the entire exhibit? I think we probably should.

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MR. CURTIS: Probably should. That's correct. I'm not sure where we're going to draw the demarcation, however.

MR. GINDER: Would it be appropriate, counsel, to note in large letters PARTIAL so we correlate it back to the original exhibit number? But this will be designated PARTIAL right on the front?

MR. ORENSTEIN: Fine with me.

MR. GINDER: Or excerpt.

MR. ORENSTEIN: You mean not get a new exhibit number?

MR. GINDER: Right. I'm just thinking that since it is basically a report, excerpted, rather than put a new number, put excerpted under it.

MR. ORENSTEIN: Okay.

MR. GINDER: Of course, what makes sense to me today, may not make sense to me tomorrow.

MR. CURTIS: My only concern is how we mark the demarcation. Because we have a body -- we have exhibits upon exhibits, particularly one very voluminous. And those are not here. And that's not what you're trying to use those for.

MR. ORENSTEIN: I'm just trying to identify what he looked at.

MR. CURTIS: So I think that either we need to

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remark them, or we need to have a particularly well-defined demarcation of what this -- this exhibit is being used for and the extent to which you were referring to it, in terms of the body of the exhibit.

MR. ORENSTEIN: Let's just remark them. I've already made the copies. It's not like we're saving trees by not remarking them.

MR. GINDER: Okay.

MR. ORENSTEIN: Let's mark this.

(Exhibit 3107 & 3108 marked for identification.)

BY MR. ORENSTEIN:

Q. Dr. Wunsch, I'm handing you what's been marked as Deposition Exhibit 3107.

A. Uh-huh.

Q. This is part of the report of Zeger, Wyant, and Miller.

A. Uh-huh.

Q. Would you confirm that you've reviewed that?

A. (Reviewing document.)

I believe I have read everything that's here in this particular report of Zeger, Wyant, and Miller.

Q. Did you read it before you finalized your own report?

A. Gee. My recollection is that at least the first

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draft had been initiated, but I'm not sure whether it had been -- my guess is it hadn't been finalized when I looked at this. I requested this information fairly early on, as to when it would become available. Because when I was told about this whole business about expert report, I was told that this -- plaintiff and defendants would each be preparing these, depending upon their expert witness. And I said that I would be -- well, I would be very interested to know what was being provided by plaintiffs.

So I requested the information, I know, fairly early on. But I don't know exactly when -- I'm sorry. I can't be more specific.

Q. Okay. The report is dated June 2, 1997.

A. Okay.

Q. Your report is dated July 1st.

A. Correct.

Q. So the defendants would not have had the report before June 2nd.

A. Correct.

Q. But they had it on June 2nd.

A. Right.

Q. Or soon thereafter. Is it your recollection that you did review the Zeger, Wyant, Miller report

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between June 2nd and July 1st?

MR. CURTIS: Objection.

THE WITNESS: No, I really don't -- I don't know when I reviewed it.

I do -- like I said, based on those particular specific dates, I know that certainly the first draft of my report had already been initiated before I had --

BY MR. ORENSTEIN:

Q. Was it your intention --

A. -- available any of this.

Q. Was it your intention, in finalizing your report, to respond to the opinions given in the Zeger, Wyant, Miller report?

A. One more time.

MR. ORENSTEIN: Would you read the question, back, please?

(Record read.)

BY MR. ORENSTEIN:

Q. Was it your intention, in finalizing your report, to respond --

A. To respond, no. No.

My intention in finalizing my report, was that it was an accurate statement of what I had initiated in the beginning. Okay? It really was not in

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response to additional information with respect to the plaintiffs' suit and their expert witnesses, no.

Q. Is it fair to say that --

MR. CURTIS: Would it be possible for me to try to clarify the record in terms of when he received this material?

MR. ORENSTEIN: Oh.

MR. CURTIS: Go ahead. Ask your question.

BY MR. ORENSTEIN:

Q. Okay. Would it be fair to say that it is not your intention in submitting your report to make specific responses to the opinions given in the Zeger, Wyant, Miller report?

A. To the extent that my area of expert report bears on what's related in here, which is very large, by the way, I think there is some very general relationships, including what I've expressed today, that -- that while my report and the substance and the accuracy and the area, the boundaries of it, I think were set before I read this. When I read this, I see that there are major areas of overlap with respect to the areas in which I have knowledge.

I'm not sure what else you want me to say.

Q. Uh-huh. Was it your intent, when the report was submitted, to respond to the specifics in the Zeger,

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Wyant --
A. No. There was no intent in my report to respond to specifics of this expert report. No, there was not.
Q. Okay. Is it your intent in this deposition that that would be part of your expert testimony, to respond to the specifics of the Zeger, Wyant, Miller report?
A. To the extent that I'm questioned about that, I'll be happy to respond.
Q. Okay. So that would be --
A. I mean my -- my understanding is that this is primarily for your purposes; is that correct?
Q. One of the -- one of my jobs here, as it is Mr. Curtis's job when he's in my seat, is to try to set the boundaries for what the witness will and will not testify about.
A. Okay.
Q. And that's what I'm trying to do.
A. Do I feel that I'm competent to provide an expert opinion about a substantial amount of what's in this report? The answer is yes.
Q. And it's your intent to provide that opinion?
A. I don't know. I mean if I'm -- if I am asked about that, yes, I will provide an opinion on that.

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Q. Okay. Why don't you take a brief look at Exhibit 3108, which is the report of Jonathan M. Samet in this case. Tell me whether that is also one of the reports of the plaintiffs' that you've reviewed.

A. (Reviewing document.)

THE WITNESS: His -- his report, which consists of a relatively -- in terms of the total document, approximately 20, 25% of it, is on his expert opinions. And the remainder consists of a series of tables and references and so on. And it follows that. And then there is a CV --

BY MR. ORENSTEIN:

Q. All right.

A. And then beyond the CV is some appendices. And I have read through most of this report.

Q. Do you remember, Dr. Wunsch, in the period between July -- between -- I'm sorry. Strike that.

Do you remember, Dr. Wunsch, in the period between June 2, 1997 and July 1, 1997, did you review Dr. Samet's report?

A. Between when and when?

Q. June 2, 1997, when the report was provided to the defendants, --

A. Yeah.

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Q. -- and July 1, 1997, when your report was provided to us?
A. Again, I have no specific recollection as to when I actually saw that report. It's conceivable that it was in that envelope.
Q. But you requested it in order to inform yourself in preparing your report?
A. No. No, no. I requested it in order to understand what was being represented as the issues and -- and what was being represented as the facts on the plaintiffs' of this case. That was the reason for it. Not -- not -- my -- my informed understanding of these issues all antedated this entire episode. I mean I -- that's not to say that I haven't learned anything. That's not to say that I haven't colored certain views that I already hold -- already held. So I've been informed about those. But in no way did those -- did those have anything to do with the final format of my expert report.
Q. Did you intend in the report that you submitted to comment on anything in the Samet expert report?
A. No. I was not commenting on anything with respect to any of the other expert reports. None of that. None of my expert report is commentary on any of the other expert reports. It's not there. It's

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there, on its own, as it stands, represented in plain, simple English, exactly the way if I'd been asked to represent it a year earlier, it would have been substantially the same report.

Q. So there's nothing in your report that's intended to be a criticism of the Samet report?

A. There is no rebuttal, if you will, in any sort of way in my report --

Q. Okay.

A. -- to any of the other expert reports, no.

Q. Okay.

A. None whatsoever.

Q. I take it that one of the purposes of you wanting to be an expert witness is to put forward where you disagree with something that the plaintiffs have as part of their case; is that correct?

A. Yes. Yeah. In the most general sense, correct.

Q. Now, if you -- if you take issue with something that the plaintiffs have as part of their case, in fairness would you apply the same principles and standards that you've enunciated in your report to the testimony of defendants' expert witnesses?

A. Yes.

Q. And when you criticize an article or a study, you would apply the same principles and standards

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that you've articulated in your report to other articles and studies, wouldn't you?

A. Including those I wrote, yes.

Q. That was my next question. Can you read my notes from there?

A. No, I can't.

Q. Okay.

Let me go back to the Court Order. If you have that handy, Dr. Wunsch.

A. I do. Yeah.

We were on E?

Q. Right.

Let's look at F. "All notes, handwritings, calculations or other documents of any kind or nature existing at the time of the service of the expert's signed report prepared in whole or in part for this matter by the expert or by others at his request."

Were there any of your notes, handwritings, calculations or other documents of any kind or nature existing on July 1st, 1992, that you prepared?

A. Boy. I don't -- I have no recollection of any specific notes, handwritings, calculations or other documents that I -- that I prepared specifically with respect to the generation of my expert report at that time. I mean I undoubtedly -- I'm sure that in the

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process of discussion of this particular issue with counsel, that I took some notes.

Q. Do you still have those notes?

A. I have no -- I probably do, but I don't know whether I do or not. I mean typically I scribble things down and throw things away. I certainly -- I wasn't doing that in defiance of any of this. I wasn't aware of this particular thing. I may not have bothered to write anything down, had I known this.

Q. Dr. Wunsch, my purpose here today in my questions are not ever meant to imply defiance.

A. I understand.

Q. It's my job just to ask you questions and find out facts.

A. Let me just say this: There is nothing -- I can't think of a single thing that I would have in my possession, or that I would have prepared, that would materially change any of my representations, either at this deposition or in my expert report.

Q. Okay. But with that understanding, you think you might have some notes?

MR. CURTIS: Objection to the form of the question. Vague and ambiguous as to when those notes may have been produced or created, as opposed to the

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context of the Court's Order.

MR. ORENSTEIN: Sure.

MR. CURTIS: It specifies the time of service of the expert's report.

MR. ORENSTEIN: Sure.

BY MR. ORENSTEIN:

Q. Do you think you might have some notes that you made in -- as part of your preparation of your report, prior to the service of the report?

A. I would guess that if I have them, I have no idea where I would have placed them at this particular point. Most of the notes that I made with respect to -- to anything that was associated with my expert report, I made in the margins of the report. I made on the back sides of the pages of the report, and I gave those to counsel.

Q. Sure. Where are those old drafts?

A. Counsel has them.

Q. Did you keep any copies?

A. I mean as far as I know counsel has them. I have no idea if counsel still has them.

Q. Did you make any copies?

A. No, I didn't.

Q. Do you have any copies of any drafts with your handwriting on them?

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A. No. As a matter of fact, the last thing I was gathering was the -- was my own expert report. And I ended up mislaying that. And so I -- as a matter of fact, I looked specifically for an earlier draft, at some point, because of some information that I was attempting to retrieve, and I couldn't find one. And I asked counsel and I said --

MR. CURTIS: I'm going to at this point in time interject and instruct the witness not to testify about -- about either the issue -- particularly the issue that relates to communications between the attorneys and the witness, that go to anything involving substantive issues or the status of substantive changes to prior drafts, if any.

MR. ORENSTEIN: Okay.

BY MR. ORENSTEIN:

Q. I'm asking about the existence of prior drafts.

A. I have none.

Q. Are you aware of whether counsel has any?

A. I'm not aware of what counsel has or does not have.

Q. Dr. Wunsch, would you -- when you go back home would you look to see whether you have any notes that you made before July 1st?

A. I will. I will look.

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Q. Okay.

MR. ORENSTEIN: Counsel, I'm going to request that you follow-up on that and that if such notes exist that you provide them to us in compliance with the Court Order.

MR. CURTIS: I made a note of that.

MR. ORENSTEIN: Will you do that?

MR. CURTIS: In accordance with the Court Order, we'll conduct ourselves accordingly.

BY MR. ORENSTEIN:

Q. Dr. Wunsch, my questions and your answers I think have been using the word notes. The subparagraph F also refers to handwritings, calculations or other documents of any kind or nature that existed at the time of the service of your report, that would be July 1st, 1997.

A. Correct.

Q. That were in whole or in part prepared by you for this matter or by others at your request. Is there anything else that comes to mind that you had on July 1st?

A. There is nothing that comes to mind in that respect.

Q. Would you make a similar kind of search for all those things enumerated in subparagraph F, as you've

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promised to do for your notes?

A. Yes.

Q. Thank you.

MR. ORENSTEIN: Counsel, I'm making the same request for everything enumerated in paragraph F.

MR. CURTIS: I'll make the same response.

MR. ORENSTEIN: Counsel, I believe that the Court Order also requires that you provide drafts that were prepared at Dr. Wunsch's request. He's testified that your office did prepare drafts at his request. And so I would ask you to provide any drafts that you or your co-counsel or anybody else associated with the defense have that were in effect -- that were in existence on July 1st, 1997.

MR. CURTIS: I certainly recognize your request and we'll -- we'll take that into consideration.

From my own review of this, I'm not sure that I agree with your understanding, and to the extent that there are continuing misunderstandings between counsel and the scope of the discovery that is represented in this Court Order, you know, I reserve the right to continue to take the position that at my own reading of this, that's not necessarily the reading that I get.

I believe this is one of a number of things

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that's still trying to be worked out between counsel. But I will take note of what your position is.

MR. ORENSTEIN: Thank you.

And this is not the place to have an extended conversation --

MR. CURTIS: I understand. And it's certainly something that will have to be taken up later. We understand that.

MR. ORENSTEIN: Yes. Thank you.

BY MR. ORENSTEIN:

Q. Doctor, in preparing your expert report did you review any reports of the surgeon general of the United States?

A. No, I did not.

Q. Your report, just to refresh your memory, looking at Exhibit 3103, on pages four and five of your report you quote statements from various surgeon general reports. Do you see that on pages four and five?

A. Yeah. Uh-huh.

Q. Do you see that on page four there's a statement from the 1964 --

A. Yes, I do.

Q. -- Advisory Committee Report?

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A. Yes.
Q. And a statement from the 1982 report of the surgeon general?
A. Yes.
Q. And a statement of the 1983 report of the surgeon general?
A. Correct.
Q. And on page five there's a statement from the 1984 report of the surgeon general?
A. Correct.
Q. How did those statements come to be in your report if you did not review any of the reports of the surgeon general? Or now that I've refreshed your memory --
A. No.
Q. -- do you maybe have a different --
A. Nope.
Q. -- different recollection?
A. No, I don't.
You know, a lot of these reports are common knowledge reports. When you say did I review any of those with respect to the preparation of this, the answer is no. Have I read surgeon generals' reports in the past? Have I seen them reported on television? Have I heard them reported on radio? The

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answer is yes, many of them. Okay?
Q. With respect to the specific matters set forth on pages four and five from the various surgeon general reports, did you go to those reports from those years during the time when you were preparing your expert reports?
A. The actual year of the citation, I couldn't have told you. The substance of what is reported here, I was aware of, yes.
Q. You didn't physically go and pick the volume off the shelf and review it?
A. I did not, no.
Q. How did the specific quotations, and I believe they are actual quotations, how did they come to be in your report if you didn't read the reports?
A. One of the things that I discussed with counsel were a number of surgeon general reports. The office of the surgeon general, the qualifications of the surgeon general, in my view, the basic political role that the surgeon general satisfies. And the -- and like I said, I had -- so that a large number of these were discussed with counsel and the actual citation of the particular year was provided by counsel.
Q. Okay. You mentioned that --
A. The substance, though, the substance I'm aware

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of.

Q. You mentioned that you discussed with counsel the office of the surgeon general, the role of the surgeon general, --

A. Yeah --

MR. CURTIS: I'm going to --

MR. ORENSTEIN: May I finish the question?

MR. CURTIS: Excuse me, counsel.

Let me let you go ahead and finish your question before I make my statement.

MR. ORENSTEIN: Okay.

BY MR. ORENSTEIN:

Q. You mentioned that you discussed with counsel the office of the surgeon general, the role of the surgeon general, and specifically the political role that the surgeon general occupies. I'm not going to ask you what you told counsel. I want you to tell me today your views of the office of the surgeon general.

A. The surgeon general is a political position. It's very often occupied by an individual who is not particularly distinguished in the medical profession. Rarely is it ever occupied by an individual who can be regarded as being in the forefront of the understanding of scientific issues

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dealing with medical matters. It's fundamentally a political position. It's a social position. It's one that relates to public policies, not scientific issues. And as a consequence the so-called scientific pronouncements that come from that particular office very often none -- practically none of which are generated by the office -- we have huge governmental agencies that are responsible for the generation of information. Everything from the National Institutes of Health, National Science Foundation. The -- the various national science advisory boards, the various national medical advisory boards, et cetera. This is where the scientists who provide informed scientific opinion to the government go. Some of which ends up being distilled by the office of the surgeon general.

Q. Understanding that the surgeon general might not himself or herself in a particular year be the most expert person in the country on issues of smoking and health, is it your understanding that the surgeon general relies on others in the medical profession who are expert in that area?

A. I think he relies on everything from -- from experts in the scientific field, to experts in social sciences, to experts in political science. To

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all kinds of things.

Q. Do you have a specific surgeon general in mind who in your opinion is not a reputable public health official?

A. I don't think that I ever cited that none of them were disreputable. I don't think I ever said that any of them were disreputable.

Can I think of a single one that I regard as being a distinguished medical scientist? No. None. None during my lifetime.

Q. Is the office of surgeon general in your opinion a reputable public health office?

A. It's an appropriate political office for the political system that we have.

Q. Is the surgeon general a reputable public health official?

A. In many cases their credentials in that particular area are rather limited. They're mainly political appointees. The appropriate political associations. They are not chosen because of a distinguished background in public health usually.

Q. In your opinion does the office of the surgeon general have a political agenda in some sense beyond serving the public health?

A. Yes. I do believe so.

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Q. What's the basis for your belief?
A. I believe that the -- that the surgeon general's office represents an administration and, therefore, tries to -- tries to couch an agenda which is consistent with the administration, that they're part of.
Q. Do you believe that a political agenda of any specific surgeon general has tainted any of the surgeon general reports on smoking and health?
MR. CURTIS: I'm going to object to the form of the question, in that it's vague and ambiguous.
BY MR. ORENSTEIN:
Q. You may answer.
A. I think so, yes. I think that there have been in administrations, characterized by more aggressive roles for government, the surgeon generals tend to be more outspoken on social and medical issues.
Q. I don't know that you would testify that outspokenness itself taints the scientific judgment of a governmental official. In what sense do you believe that -- in what sense do you believe that the office of the surgeon general has been tainted by politics in any of its reports on smoking and health?
A. I don't think taint is an appropriate word. I can't respond to the word taint.

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Do I think that they've been influenced? Yes. To what extent? Yes. I think -- again, like I say, I think that, generally speaking, the surgeon general is representative of the administration, representative of the philosophy of the administration.

Do I think they approach the public on public health issues in a manner that is consistent with that administrative philosophy? Do I think that that taints their views? This is a political position. I mean it's appropriate that they express -- I don't think it's inappropriate at all that they express views.

Q. From your standpoint as a scientist, does the political nature of the role of the office of surgeon general, as you've described it, render unreliable any of the conclusions about smoking and health that have been issued in the various surgeon general reports on that topic?

A. Let me just say this: If I'm writing a scientific paper, okay? I will never, as a basis for any argument, attribute anything to the surgeon general. I mean it's not -- that's not a source of information. Okay? That's -- it's a disload of information. It isn't even a source of

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information in the sense that it would represent, as an example, somebody who was the general editor of a textbook, that was written by others. There's no -- there isn't nearly as much direct involvement of the surgeon general. The surgeon general has practically nothing to do with the -- with the actual generation, distillation, qualification, verification, et cetera, of scientific information. There are -- there are parts of -- of our -- of our national government that do.

Q. Which parts are those?

A. Those are like the National Institutes of Health, the National Science Foundation. The various boards and agencies of advisory groups to the government on scientific issues.

Q. In your opinion do any of the surgeon general reports on smoking and health rely on junk science?

A. On junk science?

Q. (Nodding.)

A. No.

On some bad science, but not junk science. I wouldn't characterize it as junk science.

Q. Maybe I used a word you don't typically use.

A. No, I understand. Listen -- as a matter of fact, if you saw -- did you see the -- the -- I did

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see the issue on junk science on, I think, ABC television a couple of weeks ago.

Does the government sponsor some junk science? Yes, the government does sponsor some junk science. The -- as would qualify for that sort of program. I don't regard it as junk science. I regard a number of things that are done under the imprimatur of science as not being very scientific.

Q. When you use the phrase bad science instead of my phrase, junk science --

A. That's what I meant. I just qualified that.

Q. When you used that phrase in connection with reports of the surgeon general on smoking and health, did you have any specific surgeon general reports in mind?

A. No.

Q. Did you mean to characterize them generally that way?

A. I don't -- again, I don't think that the -- that the surgeon general -- I never look at the surgeon general reports as being a -- a definitive statement with respect to the scientific body of knowledge regarding health medical matters, scientific medical matters.

Q. But you testified that some of them relied on

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junk science.

MR. CURTIS: Objection to the form of the question. Misstates the -- misstates the witness's earlier testimony.

THE WITNESS: As far as I know I didn't. I don't think that I ever characterized anything of a surgeon general's report as being junk science. Or even bad science necessarily.

BY MR. ORENSTEIN:

Q. I'm sorry. I may have misspoken.

I think you -- my recollection is you testified that some of the surgeon general reports relied on bad science, --

A. Yes.

Q. -- rather than I used the term junk science.

A. Yes, some of them do in the sense, as a value judgment. Some of the reports is that they aren't very good science, which is to say they don't provide lots of information.

One of the ways of looking at information is -- is to the extent the information -- if we can think of the world as being the way most scientists view it, as some sort of an external entity that is there, that is in fact following certain biological and physical laws, and the information is something

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that -- that attempts to describe that whole process.

A very large number of reports that have been cited in this area have not been very informative; in other words, they haven't really added to the body of knowledge with respect to an understanding of the underlying physical and biological processes.

So to that extent, when I say that they're bad science, they're bad in the sense that they don't inform very much. They don't illuminate. They don't allow us to -- to appreciate in a deeper sense the nature of life and disease and so on.

Q. Are they unreliable for that reason?

A. No, I don't think that they're unreliable for that reason. I think that the conclusions that are -- that are reached very often are unreliable, yes.

Q. Are you familiar with the conclusions of the surgeon general on the questions of smoking and health?

A. I'm aware of several of the conclusions that the surgeon general -- several pronouncements of the surgeon general.

Q. And are those pronouncements bad science?

A. They're political statements. They're not -- I

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don't think they're intended as being science statements. If they're intended as being science statements then they're not very complete. They're not very -- they're not very accurate. They're not very precise. They're not very informative.

Q. Are they bad science?

A. Pardon?

Q. Are they bad science?

A. The statements themselves, are they bad science?

Q. The conclusions that the surgeon general has drawn on smoking and health?

A. There are some conclusions that have been put forward, which I think are represent -- represent overstatements of the truth, yes.

Q. I'll get into some specifics later, but you haven't said whether you think they're bad science.

A. Well, in and of themselves they're not bad science. Okay. Don't -- I mean the conclusions that are -- the conclusions, first of all, are not science. Okay? I mean let's go -- let's look at what we call science. If I provide you a body of evidence and you decide to reach some sort of conclusion from that, there is no science involved in that. Okay. It's an interpretation of the data. Is

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the interpretation of the data consistent with the biological and physical reality? To the extent that it's not, it's erroneous. To the extent that it is, it's an accurate portrayal. And -- and so that the question as to whether or not the conclusion are bad science? The conclusions are really not part of the science.

Q. Why don't we come back to that?

A. Okay.

Q. Let's talk about your preparation for this deposition, as opposed to the topics we've discussed previously--how you came to be an expert and how your report was prepared.

Now I want to talk about this deposition itself.

Did you review any documents in preparation for this deposition?

A. Any documents with -- there were a couple of documents that I remember reviewing. There was a nondisclosure agreement that was necessary for me to sign.

I, of course, reviewed my expert report on a couple of occasions.

The -- at some particular point, which I was not sure of before, I had asked for the information with

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respect to plaintiffs' expert witness and I did review those.

And -- and I think for purpose of answering your question, I would put most of that effort as having occurred I guess you would say in preparation for deposition or in preparation for whatever the next phase of --

Q. Sure.

A. -- whatever we were going to do.

It wasn't -- those activities were not aimed at this particular deposition.

And then I had one meeting with counsel, to where he suggested that there would be certain kinds of questions that would be asked.

Q. Okay. That was just with Mr. Curtis?

A. That was just with Mr. Curtis.

Q. Was there anybody else present?

A. There was not.

Q. Was that also in Florida?

A. That was also in Florida.

Q. How long did that meeting last?

A. The meeting itself lasted one day. There were a lot of things that happened in the course of that day. I made -- I made Mr. Curtis an expert on tropical fruit during that day. Fixed him lunch.

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Fixed him breakfast. My wife was there during that -- the social aspects of our meeting. And we had casual conversations and so on. And...

Q. Did this meeting take place at your home?

A. It did.

Q. Was your wife present during any of the nonsocial aspects of the meeting?

A. No, she was not.

Q. Smart woman.

A. (Laughter.)

She had better things to do with her life. I'm sure that was her view, for sure.

Q. Aside from the nondis- -- well, strike that.

Have you signed the nondisclosure agreement?

A. I did.

Q. When did you sign that?

A. That was actually provided to me, I think, at that particular meeting. And I signed it -- it needed to be notarized. And so that it couldn't be signed at that particular point. And I took it into work and had it notarized a couple days later. Signed it and sent it back to Mr. Curtis.

Q. You got it at this meeting in preparation for this deposition?

A. Correct.

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Q. You had not seen it or signed it at the time you got the plaintiffs' expert reports?
A. I had not signed it before I received the plaintiffs' expert reports.
Q. Had you seen it?
A. Had I seen what?
Q. Had you seen the nondisclosure agreement?
A. I don't believe I had.
Q. What does it mean to you, that -- what does that -- that statement that you signed mean to you?
A. Not a lot. I haven't discussed this case with anybody. The -- I was rather surprised. I mean I sign nondisclosure agreements all the time as a consultant for corporations with regard to the research plans, with regard to their investment plans, et cetera, et cetera. And I understand that.
I don't understand this, to be perfectly honest. I was told that both plaintiff and defendant felt as though there were certain things that they wanted to keep confidential and I said, well, it's all confidential. I have not discussed this with anybody. And so I signed it.
Q. You understand that's an order of the Court, --
A. I do understand.
Q. -- it's not just an expression of a belief by

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the plaintiffs and defendants?
A. I do understand that part. And I believe I've complied with it --
Q. Sure.
A. -- even before, maybe unwittingly, but nonetheless I've complied with it.
Q. Besides the Samet report and the Zeger, Wyant, Miller report that you've looked at today, what other reports from plaintiffs' experts have you received and reviewed?
A. Those are the two that I recall in most detail. There were a couple of others. I know that there was one regarding -- by an internist regarding lung cancer. I recall that one.
Q. If I told you that the name of the author of that report was Barbara Bowers, does that refresh your memory?
A. I believe that's the name.
Q. Do you remember looking at any others?
A. Yeah, I did. I'm sorry, at this particular point I'm not recalling any of the specifics.
Q. Okay.
Again, as with the Samet report and the Zeger, Wyant, Miller report, you did not prepare your expert report in rebuttal to any plaintiffs' reports?

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A. Absolutely not. Absolutely not. Unqualifiedly not.

Q. What other documents besides the nondisclosure, agreement, your own expert report, and the plaintiffs' expert reports did you review in preparation for this deposition?

A. None.

Q. Are you --

A. None that I can think of.

Q. Are you familiar with the term predesignated document?

A. No, I'm not. I mean I've seen that in the course of recent -- I mean I'm not sure whether that term is in -- is referred to in -- in this section.

Q. Uh-huh.

A. But I -- I saw that this morning.

Q. Are you -- are you aware of the fact that each side in this case is required, prior to the deposition, to notify the other side which documents they plan to refer to at the deposition?

A. I am aware of that, yes.

Q. Have you reviewed any of the pre -- are you aware of whether plaintiffs in this case predesignated any documents for your deposition?

A. Yes, I am.

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Q. How are you aware of that?
A. I -- counsel had a copy of -- of what was being requested and went over it with me.
Q. Okay. So you looked at -- you looked with counsel at the documents that plaintiffs predesignated?
A. Yes.
Q. I think you testified just a couple minutes ago --
A. As far as I know, it was consistent with everything that's basically listed here.
Q. Okay. But I think you testified a couple minutes ago that there were no other documents besides the nondisclosure agreement, the expert report, and the plaintiffs' expert reports that you reviewed in preparation for this deposition. Does my bringing up this issue of predesignated documents refresh your recollection that you reviewed documents?
A. No. It may be regarded as a misstatement on my particular part. I did not -- I wasn't given that document for purposes of review. It was strictly counsel discussion. He's looking at the document. He has the document. Did I have the document? He never provided me a copy of that document. So am I

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missing something? I think my statement was accurate.

Q. Sure.

There is a document which is called a predesignation list and that document lists other documents. What I'm trying to find out is if you reviewed the documents that were listed on any of the plaintiffs' predesignation reports?

MR. CURTIS: I'm going to object to the form of the question because it's confusing. And although it's not an exhibit on the table yet, it misstates the nature of the document.

MR. ORENSTEIN: Okay.

BY MR. ORENSTEIN:

Q. Did you look at any of the predesignated documents?

A. Last night we -- I met with counsel. We had a cup of coffee -- cup of tea. And -- and discussion with respect to -- to what to expect. He had the list of predesignated documents with him.

Q. Did you look at any of those documents?

A. I did not.

MR. ORENSTEIN: Why don't you mark these two?

MR. CURTIS: Do you have the attachments to these predesignations? Because in my mind

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predesignation -- when you talk about the predesignation, you automatically incorporate documentation that was provided as attachments to these two court filings. And it's a little confusing, quite frankly, when we talk about predesignations whether we're talking about the list, which is the court filing, as opposed to the attachments, which are part of the predesignation, but are of themselves separate documents.

MR. ORENSTEIN: I sense that the witness is confused by this legal terminology, but I think you and I will understand it sufficiently that I can ask him questions about it.

(Exhibit 3109 marked for identification.)

BY MR. ORENSTEIN:

Q. Dr. Wunsch, I'm handing you what has been marked as plaintiffs' Deposition Exhibit 3109 -- that is an August 26, 1997 -- this is a six-page document. The first page is an August 26, 1997 letter --

A. Uh-huh.

Q. -- from William H. Manning to Robert A. Schwartzbauer. The second, third, and fourth pages have an itemization going from numbers one through twenty-six. Do you see those?

A. I do.

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Q. Let me just ask you whether you have reviewed in preparation for this deposition any of the items thirteen through twenty-six?

A. Okay. First of all, let me correct some earlier testimony.

Q. Please. I think my questions may not have been as clear as they could have been, so please go ahead.

A. Because I wasn't looking at this at the time.

While I met with counsel last night, counsel had a very thick packet of documents. And -- and he said that these were part of --

MR. CURTIS: I'm going to request that the witness be -- continue to be careful about talking about conversations between witness and counsel that relate to substance in the lawsuit.

MR. ORENSTEIN: You can go ahead.

THE WITNESS: In any case, by the time we got to this, it was getting later. It was approaching 11:00 o'clock. I actually carried that sheaf of documents back to my room last night. I put it on my night stand next to me. I turned on the television, I started to fall asleep during the news. I turned off the television. This morning I brought them downstairs. I gave them back to counsel. I did not look at them.

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Q. You could have fallen asleep just as well reading the articles as watching TV.
A. I probably would have, as a matter of fact.
Q. So is it your testimony that you have not reviewed --
A. I have not reviewed --
Q. -- items thirteen through twenty-six?
A. I have not reviewed items thirteen through twenty-six.
Q. You physically held in your hand a stack of articles which you think included these, but --
A. I do believe they included these. As a matter of fact, I'm absolutely certain that one of them -- I looked -- there was a cover sheet on the thing. I looked underneath the first and I think it was article -- it was an article by Doll, in any case. Was the first thing underneath the cover sheet.
Q. Did I hand you the other exhibit?
(Exhibit 3110 marked for identification.)
BY MR. ORENSTEIN:
Q. Dr. Wunsch, I'm going to hand you an exhibit which is marked as Deposition Exhibit 3110. This is a four-page document. The first page is an August 29, 1997 letter from me to Robert Schwartzbauer. The second and third pages include a number of items

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numbered one through fourteen.

A. Uh-huh. Yes.

Q. I've already asked you about number three.

Other than number three, have you reviewed any of the --

A. No, I have not.

Q. -- documents listed?

A. I have not. I have no idea what these are.

Q. Have you ever seen the expert report of Donald Rubin?

A. No, I have not.

Q. Have you ever seen the expert report of Edward Foster?

A. As far as I know, I have not.

Q. Have you ever seen any of the expert reports of any of the other defendants besides yourself -- strike that.

Have you ever seen any of the expert reports submitted by the defendants in this case --

A. I have not.

Q. -- from any expert other than yourself?

A. I have not.

Q. You testified that you specifically requested that counsel provide you with certain expert reports from the plaintiffs.

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A. Correct.
Q. You've not made a similar request about expert reports from the defendants?
A. Have I?
Q. Yes.
A. No, I haven't.
Q. Why is that?
A. I'm assuming that the -- that the expert reports that are being generated by other areas of -- are -- are areas in which I'm not going to testify. I really don't -- so I don't think that I would need to be informed about those.
Q. Have you ever asked counsel to provide you with any of the tobacco company documents --
A. I have not.
Q. -- that --
Please let me finish the question.
A. I'm sorry.
Q. Have you ever asked counsel to provide you with any of the tobacco company documents that have been produced in this litigation on issues of smoking and health?
A. I have not asked for any of those documents.
Q. Have you seen any?
A. I have not. I have no idea -- I have not even

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seen a listing of those documents.
Q. Was it important to you in putting together your expert report to know what information the tobacco companies have in their own files on the issues of smoking and health?
A. I don't think it was material to my report at all.
Q. Why is that?
A. I think the report stands on its own as to what it -- as to what it purports to say. None of which is dependent upon whether the tobacco companies know or do not know whatever is in my report.
Q. Do you consider the statements of the tobacco companies, whether trade associations on issues of smoking and health, to be reliable?
A. I don't know --
MR. CURTIS: Objection to the form of the question and that's overly broad and general.
BY MR. ORENSTEIN:
Q. You may answer.
A. I don't have any specific reference to what those pronouncements are. I mean -- I mean I read stuff in the newspaper. I watch television. I see some general things with respect to information. But I mean these are strictly political matters. I mean

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they don't have anything to do with areas of my expertise.

Q. Are the statements by tobacco companies on issues of smoking and health political matters in your opinion?

MR. CURTIS: Objection to the form of the question. Overly broad and overly general.

THE WITNESS: Political overtones, yes.

BY MR. ORENSTEIN:

Q. What is your understanding from the general media about the position of the tobacco companies on whether smoking causes disease?

MR. CURTIS: Objection to the form of the question. Overly broad and overly general.

THE WITNESS: I honestly do not have an informed understanding of the tobacco companies' views. I know there was a to-do in the press about Bennett /HRA bow's statements. I know there was a to-do in the press about ^ bible's statement.

BY MR. ORENSTEIN:

Q. Do you believe that the statements by the tobacco companies are statements that members of the public who are unschooled in medicine can rely upon?

MR. CURTIS: Objection to the form of the question. Overly broad and overly general. And also

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ambiguous.

THE WITNESS: Yeah, and I think that the ambiguity -- I mean if you can point me to some particular place that says the tobacco industry has stated the following--one, two, three, four, signed by the tobacco industry, whatever that represents, I'd be interested to read such a document. I don't recall there ever being anything published like that. If there was ever anything published like that, it completely missed me.

BY MR. ORENSTEIN:

Q. You don't know whether the tobacco companies have ever published any statements regarding smoking and health?

A. I'm not aware of them having generated articles in the -- in the scientific or quasi scientific literature that I -- that I review. I read -- I also read some summaries of some general interest. I get the New Yorker, I read that every now and then. I don't recall any articles by tobacco representatives.

Q. Doctor, is it your testimony that you don't have any information about the position of the tobacco industry on smoking and health?

A. Actually it's one area in which I have a lot of curiosity about. But I don't have any -- I've never

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seen anything that was purported to be an official representation of the tobacco industry's views on things.

You know one of the interesting things -- at one particular point one of the scientists in our department actually had a contract that came from the Tobacco Research Institute, whatever else it was, to develop an assay for codeine and nicotine, which he did. And I was aware of that particular thing. It funded a study of his and whatever.

I received on some occasion, that I can remember, in the quite distant past, ten, fifteen years ago, some summaries of articles of research that have been sponsored by the tobacco industry. Most of which was fairly decent science. Most of which was published in the general literature.

The -- I do know that in general there was a -- as an example, I have a specific recollection of having watched a Congressional Committee Hearing, where there were representatives from the tobacco industry, and whoever was presiding over the hearing went right down the list: Do you believe that -- that -- whatever. I can't remember exactly how it went. And I remember some responses that we don't think has been demonstrated. This is not a proven

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thing. No, I don't believe, whatever.

So if you're asking whether that was a representative? I mean it certainly was a significant group.

I don't look at, quote, the tobacco industry, as being a conspiratorial group. I think that these are people who compete with each other. I think these are people that, as individuals, have their own views about a large number of things.

I don't look at these as being people out there who are some sort of an evil menace. I don't think Darth Vader created the tobacco industry, okay?

I mean tobacco is a relatively old product of the New World. I mean Sir Walter Raleigh brought it back. It was tobacco, it was growing here, the Indians smoked it. A lot of people smoked it. People started selling it. It was a major item of commerce for a number of years.

Q. But you do have a recollection of Congressional hearings -- does it refresh your recollection if I refer to them as the Waxman Hearings?

A. I wouldn't be surprised if Waxman was involved in it.

But would he have been -- would it have been the Waxman Hearings within the last year?

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Q. Well, I can't answer your question.
A. He's no longer committee chairman, as far as I know. Was Waxman there? I'm sure Waxman was there if it was a health-related issue because he's an active and familiar --
Q. You do have a recollection that a number of cigarette company executives testified at a congressional hearing denying that smoking causes diseases?
A. I don't have a specific recollection as to precisely what their testimony was. My recollection is, in all these -- in most of these cases, where I have specific recollections, is not a matter of denying, as a matter of saying that the issue is an open issue.
Q. Okay. And are members of the public entitled to rely on those representations?
MR. CURTIS: I'm going to object to the form of the question, that it's ambiguous.
THE WITNESS: Are members of the public -- one more time.
BY MR. ORENSTEIN:
Q. Are members of the public entitled to rely on those representations?
A. They're entitled to do anything --

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MR. CURTIS: Objection to the form of the question. It's ambiguous.

THE WITNESS: Okay.

They're entitled to whatever their beliefs are. They're entitled to believe the world is flat. They're entitled to believe anything they want to believe. That is my view as to what the public's entitlement is.

BY MR. ORENSTEIN:

Q. Do you believe that the question of smoking and health is comparable to the question of whether the world is flat?

A. No, I don't think it is.

Q. How so?

A. In one particular thing we're talking about a physical entity. We're talking about something that is arguably a matter of -- the appropriate geophysicist can provide all kinds of sort of stuff.

Another issue we're talking about deals with human behavior. They are fundamentally different things. You know, when we talk about human behavior and we try and scientize it, it's a bastardization of science when we do that. Okay. Because none of that fits anything other than our own self-generated model as to what we are.

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Q. My question was --
A. We don't have -- you know, what happens is appropriately that question maybe could be answered by monkeys, or dogs, or cats, whatever. But it's very difficult as a human to answer because we're talking about an area dealing with human endeavor, okay?
Q. My question was --
A. So they are fundamentally different issues.
Q. My question was related to the science of smoking and disease, not human behavior.
A. Smoking is human behavior. Smoking is human behavior. Smoking is not something that is a -- this is not something that man has been doing for the last two million years or so, since there was a creature that probably, if he existed today, would give him a right to vote. Okay? Smoking is a -- is a part of human behavior.
Q. Whether that behavior causes disease, is not something that science can have an opinion on?
A. Oh, yes, science can have -- science can study that particular behavior. Can study aspects of that particular behavior. Science can study the smoke itself. Science can study the influence of elements in that particular smoke on various biological

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entities. There are a lot of things that science can do about that particular thing.

Q. Okay. I asked you before whether the public was entitled to rely on the statements of the cigarette company executives that cast out on the relationship between smoking and health. And you answered that sure, they were entitled to, they were entitled to do anything. In your opinion, as a scientist, is such reliance reasonable?

MR. CURTIS: Objection to the form of the question. That's vague and ambiguous. And confusing.

BY MR. ORENSTEIN:

Q. Are you confused by the question, Doctor?

A. Yes.

Q. How so?

A. To an extent I am.

The question basically deals with the word rely. There are many, many pieces of information we get with -- that has various degree of scientific foundation for it. And -- and to the extent that the views expressed demonstrate a -- a reluctance to embrace this issue as being one that's totally worked out and totally understood, and that one can -- can come to any reasonable conclusion with respect to the

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way humans should behave, I think -- I think only the most gullible of people would -- would -- would believe anything from -- from whether it's said by the surgeon general, or it's said by the tobacco company, or it's said by whatever. Those are -- those are issues that are fundamentally social issues. They're political issues. They're not scientific issues. They deal with these ideas about what I need to do with my life. They deal with value judgments. I think so -- and people, when you say rely, that's how they couch these things, with respect to their value judgments. And I would expect that -- that, yes, those statements can be regarded as completely appropriate statements, in many cases, from many of the different viewpoints.

Q. And so it's unreasonable if a member of the public relied on that?

A. I didn't say -- I didn't say it was unreasonable if they relied on it. I -- I said that -- that if -- if the process of evaluating statements does not take into account the perspective of the individuals who are making the statements, whatever the motivations of those people may be, it's -- it's one that's being made by somebody who is very gullible. And that needs to be understood and that's my view.

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Q. In your opinion was it reasonable for members of the public to rely on representations that you've described remembering by the tobacco company executives at those congressional hearings?

A. I hope I answered that.

MR. CURTIS: Objection to the form of the question. Asked and answered.

BY MR. ORENSTEIN:

Q. I don't think you've answered it. I'd like you to tell me yes or no.

A. I'm going to try and rephrase my response.

I think the extent to which anybody relies upon pronouncements from anybody, on issues that are far from being scientific issues, okay? That deal with the nature of human behavior, to the extent that one does not process, as part of the input the source and the perspective and the viewpoint of the people who are making the statements, one is being very gullible.

Q. Okay.

A. So -- but for me to say it's reliable or unreliable, no, I'm not going to say that. Because I -- because it doesn't fall in that area.

There's an element of -- of useful and valuable information that's being conveyed. And accurate

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information that's being conveyed. And if one doesn't -- if one doesn't appreciate that at all, then -- then one has a really very narrow view of the world.

Q. Okay. So why would it be unreasonable to rely on information which you've described as having elements of usefulness and accuracy?

A. To the extent that one has distilled it and extracted it in the way that I have referred to, one can rely on it. To that extent. Couched within those particular words.

Q. Okay.

A. And it doesn't make any difference whether it came from the surgeon general, or it came from the president of some tobacco company.

Q. Okay.

A. In both cases, okay, that same statement applies.

Q. Have you read any of the depositions taken in this case?

A. No, I haven't.

Q. Have you seen them?

A. No, I haven't.

Q. Have you asked counsel to provide them to you?

A. No, I have not.

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Q. Is that information which you think would be useful to have?
A. I suppose before I would go to trial, to testify at trial, I may ask for, if there was anything substantive added to the expert reports. If there was something substantive that they felt was added, to where the expert reports were incomplete, to where they overlapped with the areas in which I was to testify, I would expect counsel to provide that to me.
Q. Okay. Aside from the meeting that took place at your house, that you described, where counsel apparently was the beneficiary of some Florida fruit, and the meeting that you described that you had last night over some coffee or tea, --
A. Yes.
Q. -- have you and counsel had any other meetings in preparation for this deposition?
A. No.
Q. Have you met with anybody besides counsel in preparation for this deposition?
A. No.
I did have a phone call from Susan just about mechanics of -- of getting here and --
Q. Sure.

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A. -- whether or not she was going to be here, and a couple other things, I can't even recall specifically right now. Very brief. Few minutes.

Q. How long did your meeting with counsel last last night?

A. I got to the hotel at about 8:00 o'clock and we wrapped things up at somewhere around 10:30 or 11:00 o'clock.

Q. On the whole, including your meetings with counsel, and your own preparation time, how much time would you say you've spent preparing for this deposition?

A. That's pretty close to it. I have not done any other specific preparation.

Q. And --

A. I did review my expert report on two or three occasions between that time and the deposition.

I do recall having put together the papers that I had assembled over a period of time, and glancing at the papers that had been given to me, and specifically these were the other expert reports, copies of scientific articles, et cetera.

Q. On the whole, how much time would you say you've spent from start to finish on the report itself, including your meetings with counsel?

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A. In the neighborhood, plus or minus, 50% of thirty hours.
Q. Have you reviewed any of your billing records on that?
A. No, I have not.
Q. Do you submit an invoice to your department?
A. I have a -- we have an E-mail system and I just type a little E-mail to the billing office.
Q. Okay.
A. And I don't maintain any records of that.
MR. ORENSTEIN: Looks like a good time to break for lunch? Are you comfortable with that?
THE WITNESS: If you are.
MR. ORENSTEIN: Off the record.
(Luncheon recess taken.)
MR. ORENSTEIN: Back on the record.
BY MR. ORENSTEIN:
Q. Doctor, we've just come back from a lunch break. Do you understand you're still under oath?
A. I understand I'm still under oath.
Q. Did you review any documents while you were at lunch?
A. I did not review any documents at lunch.
Q. Okay. Did you have a good lunch?
A. I had a good lunch.

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Q. Good.
Sir, where were you born?
A. I was born in La Junta, Colorado.
Q. And what year were you born?
A. 1939.
Q. Could you just tell me very briefly, I know you live in Miami now, you were born in Colorado, where have you lived in the interim?
A. I went to undergraduate school, graduate school, and medical school in Chicago and in Evanston, Illinois. And from there I moved to Boston, where I spent three years in training in pathology. And from that point I moved to Miami, where I took a position and I've had that same position since I moved there in 1973.
Q. Do you have any military service?
A. Only as a reservist.
Q. What branch of the service?
A. Marines, navy, and army.
Q. Have you ever seen combat?
A. No.
Q. You mentioned earlier that you were married. Do you have any children?
A. No.
Q. In what was your undergraduate degree?

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A. My undergraduate degree was in English composition.
Q. And in what was your -- you received your M.S. in biochemistry?
A. Correct.
Q. When you were studying for your M.S. degree did you take any courses where the subject of smoking and health was discussed?
A. I don't believe so. I don't recall that.
Q. Did you take any courses where the surgeon general's 1964 report was discussed?
A. I was aware of it at that particular time, but I don't recall that ever having been a subject matter for any of my lectures.
Q. Okay.
A. Studies.
Q. I think you testified earlier that you have over the course of your career looked at the various surgeon general reports on smoking and health?
A. Correct.
Q. Do you make that part of your practice, to keep abreast of those developments when they arise?
A. More or less casually I do. Very often those are published as part of some scientific reports or whatever else it is -- as an addendum, as an article,

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as an editorial, et cetera. And I read -- sometimes they are abstracted. And so I become familiar with -- with them.

Q. In your M.S. program did you take any courses in epidemiology?

A. I did not take any courses in epidemiology.

Q. In statistics?

A. In my master's program. Not statistics, per se. On the other hand, statistical methodologies, as applied -- as I mentioned before, in quantum chemistry, and statistical thermodynamics. And enzyme kinetics. These were all areas in which I had substantial exposure to statistics.

Q. In addition to your M.D. degree you have a Ph.D. in biochemistry?

A. That's correct.

Q. For either your M.D., or your doctorate in biochemistry, did you take any courses where the subject of smoking and health was discussed?

A. Not as formal subject matter of any of my courses, no.

Q. Sounds like you have some general recollection. Could you share that with me?

A. Well, one of the things that I took is some

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specific course work, was in nucleic acid chemistry. And the -- I entered into graduate school shortly after Watson and Crick published their famous short paper on the structure the DNA. The whole saga about the understanding of the genetic code, the -- the role of genes an mutations and chemistry related to mutational events, et cetera, was all subject matter for that course and other courses that I was taking. One of my mentors was a nucleic acid chemist.

My -- my actual dissertation bore directly on genetic codes and -- and as a matter of fact, is -- provided a tool that's still used for doing DNA analysis today.

Q. What in your -- what in your recollection ties those issues to the question of smoking and health?

A. The general issue of carcinogenesis, the haz- -- has its roots and is all tied to -- our understanding of that is all tied to molecular biology, dealing with -- with ultimately nucleic acid chemistry and nucleic acid biochemistry, et cetera.

Q. Do you remember coming away from your course work in medical school or in your Ph.D program with an opinion about whether smoking causes disease?

A. I remember reading many articles during the time I was in both graduate school and medical school,

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because I was moving back and forth during that period of my life. Many, many articles with respect to our understanding or attempts to understand the role of carcinogenesis. And that included everything from viruses, to physical agents, ionizing radiation, to specific compounds which -- industrial compounds, environmental compounds. Foods.

Q. Doctor, --

A. Et cetera.

Q. About smoking and disease, that was my question.

A. Well, smoking is all part of that. Okay? The mechanisms, the purported mechanisms, presumably have something to do with that.

Q. I'm not talking about presumably. My question was: Do you remember coming away from your course work in medical school, or your Ph.D program, with the conclusion about whether smoking causes disease?

A. Whether smoking ever causes disease? With respect to a conclusion regarding the role of smoking and carcinogenesis, I think I stated my point fairly clearly on that today. And the answer to that is the same answer I had at that time--that whatever the actual chemical linkages are, they have yet to be discovered. There's some clues that have yet to bear fruit in that particular area.

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With respect to smoking and certain other kinds of disease, certainly patients who have asthma, smoking is a -- is a -- is a -- exacerbates the disease significantly. And people who have asthma shouldn't smoke because of that. And I was aware of that, that was an established fact. As is pollution in general. We used to have these smoky days in Chicago, as you remember, where we would have huge emission admissions to the hospital from -- because of temperature inversion and really smoggy days.

And the -- so to that extent, exacerbation of disease in cases of individuals who had not only asthma, but had certain other lung problems, tendency towards bronchiectasis, chronic bronchitis, et cetera, et cetera, smoking clearly was a factor that was injurious to those people who had those particular disorders. And patients were counseled who had any of those disorders that they shouldn't smoke.

Q. Do you have the opinion that aside from asthma and bronchiectasis --

How do you say that?

A. Bronchiectasis.

Q. Bronchiectasis and COPD, that smoking significantly exacerbates any other condition?

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A. There's a -- a peripheral vascular condition where circulation, particularly associated with the legs, I've seen a couple of cases of so-called Buerger's disease, and those patients were counseled that they shouldn't -- that they shouldn't smoke. And clearly smoking was not good for people who had that disease.

Q. Help me understand, because I know you have a definitive way of analyzing these things. Help me understand why it is that it's not been proved to your satisfaction that smoking might cause an underlying disease, but it could be proved that smoking would worsen a condition that somebody already had.

A. One of the things that happens in the latter case is -- is the ideal form of scientific experimentation, where the subject is their own control. In many disorders of allergies and sensitivity to various kinds of environmental exposures, chemical compounds, et cetera, where you can produce exacerbation of the disease by exposure, and lessen the consequence of the disease by removing it, and you can do this repeatedly, you have -- you've sort of proven no matter what -- you haven't really proven in the -- necessarily in the -- in the

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most rigorous, logical sense, because it's always possible that -- that what you've witnessed, it was something that happened just by chance. And believe me, there's a lot of things that masquerade as cures simply because of that reason. Particularly for diseases like arthritis, where people say, "Well, I did this and my arthritis went away," and so on.

But -- but the problem in most of the diseases that I just referred to, the chronic diseases, they don't tend to have periods of spontaneous remission, where the disease goes away, et cetera. And as a consequence of that, it's rather relatively definitive that patients do well when they stop and do poorly if they resume.

Q. So from your perspective as to causation in an individual patient, it's easier to draw a conclusion when the patient has a disease, than when the patient is disease-free?

A. Absolutely. That there's a relationship in terms of their health. In those particular cases there's no -- much, much less of any kind of a question because, like I say, the patient sort of serves as their own experiment and their own control.

Q. Sure.

Besides the disease -- diseases or conditions

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which you've listed, are there any others that come to mind?

MR. CURTIS: Objection to the form of the question. Ambiguous.

BY MR. ORENSTEIN:

Q. Besides the diseases and conditions that you've listed as falling into this latter category, where you were exacerbating an existing condition and, therefore, you can attribute a causal link to smoking, are there any other diseases or conditions that fall into that category?

A. None that I can think of at this point.

Q. Okay. Now, -- did you take any courses in medical school, or in your Ph.D program, where the surgeon general's reports on smoking and health were discussed?

A. It was probably mentioned at one or two lectures. At least one of the various reports.

Q. Did you take any courses in epidemiology?

A. Actually I have taken some work in epidemiology. I -- I don't -- I don't actually have any credit hours specifically in epidemiology. But I ended up taking some course work at the Harvard School of Public Health and worked with some people there who were involved in epidemiology and some of

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these people were doing computer work at the Harvard Computer Center and I worked with them and -- and looked at some of the work that they were doing there.

A good friend of mine at that time was an epidemiologist working at NIH. We spent quite a bit of time working on things.

I've since actually had some contract research that was done with respect to epidemiology.

Q. What was that?

A. The Center for Disease, CDC, Center for Disease Control -- Center for --

Q. Disease control? Is that the Sentinel Hospital?

A. Sentinel Hospital surveillance study. I participated in that study.

Q. Did you take any courses in statistics, either at medical school or in your Ph.D program?

A. I took as an undergraduate one course in statistics. And other than as an -- as a part of the actual -- other formal courses that I took, that was the only actual course that actually have a title of statistics. But like I say, I had lots of exposure to -- to statistical methods and so on in my other formal course work. And then a lot of independent work in statistics, as well. Including in my

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dissertation.
Q. You did your internship in clinical pathology?
A. That's correct. Internship and residency, yes.
Q. At Northwestern?
A. No. It was Peter Bent Brigham Hospital in Boston.
Q. In Massachusetts?
Were you seeing patients?
A. Did I see patients then? Yes, I did see patients then.
Q. Were you mostly in the lab or were you mostly seeing patients?
A. Mostly in the lab. Probably only 10, 15% of my time was spent seeing patients.
Q. Did -- did you ever counsel a patient during your internship or residency to give up smoking?
A. I'm sure that I did.
Q. Why would you have done that?
A. These are -- these were people who had the diseases that I mentioned before, that -- chronic diseases, where they needed counseling. That they were -- that they were probably damaging their health.
Q. Now did you ever see a patient who did not have one of those diseases, but you believed to be a

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smoker and you counseled that person to give up smoking?

A. I have probably, on a number of occasions, been asked by some patients as to whether or not this or that particular problem that they were -- that they were experiencing was smoking-related. I have probably on a number of instances counseled patients that -- that they should either limit their smoking or stop their smoking.

Q. These patients who asked you whether a particular problem was smoking-related, what was your response?

A. In most cases I'd say I really don't know. But the question is: If you're having a problem with it, and you're concerned about it, you know, why don't you cut back? See whether or not it helps. Or why don't you stop altogether?

Q. Why would you counsel somebody to cut back or stop?

A. Well, these are people again, like I say, that are concerned about symptoms, concerned about signs. Concerned about aspects of their own health who were expressing an interest in it. I think that those people are people who maybe would be motivated to -- to change their behavior. And so I would offer that

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as counsel to those patients.

Q. Would you counsel a patient who did not express a desire to stop smoking, that it would be better for their health to stop smoking?

A. I don't really run across that. Would I counsel a friend? Probably.

Q. Why?

A. Why? Oh, you know, my feeling is that if you -- if you smoke in moderation and if you derive adequate amount of enjoyment -- it's a decision that you should be able to make of your own. And I firmly believe that. And I firmly -- people -- feel that people should be able to manage their own lives in that particular respect.

On the other hand, if a friend said, you know, I'm thinking about giving up smoking, you know, what's your view on it? Do you think I'd be better off? I'd say these are the upsides, these are the downsides, but there's probably more upsides than downsides and you're probably lessening your risk if you're concerned about your long-term health risks. I would say there's a probability of that.

Q. It's more probable that somebody would get a disease if they smoked than if they didn't smoke?

A. Yeah. I mean there's a relationship. It's very

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hard, mind you, to -- when I respond to that question, in the most general sense, I'm talking about an idealized world where I can take exactly the same individual, exactly everything else the same, and I can add to this one variable. And under those particular circumstances, and only under those particular circumstances, would there be an increased probability. Probably. The question is, is there any way of measuring that with any degree of scientific assurance or validity and the answer to that is no, resoundingly.

Q. It's more probable that somebody who smokes would get lung cancer, than somebody who didn't smoke?

A. Is it more probable that they would? In the idealized world that I just talked about, we know that there's a risk factor. Presumably those risk factors purport -- purport to provide a crude indication of that happening in the idealized world. And that there's a risk factor there, yes.

Q. It's more probable?

MR. CURTIS: Objection to the form of the question. Asked and answered.

THE WITNESS: If you want me to restate exactly what I just did, I can do that.

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BY MR. ORENSTEIN:

Q. Is it more probable that someone who smokes will get chronic obstructive pulmonary disease than somebody who doesn't smoke?

A. That's a very, very difficult question to ask. And -- to answer, I should say. It's easy to ask.

My feeling is that there is a very, very large segment of the population who, whether they smoke or don't smoke, they're not going to get obstructive pulmonary disease. So when we talk about it we're already presupposing an individual, okay? So is it -- is it likely that there are some people, who because of their genes, or whatever else it is, have a -- have a -- have a probability of developing chronic lung disease, where maybe that disease would not have been manifested in the event they didn't smoke, but if they did smoke, that it would be manifested, I would admit that that is a possibility. I think that a very large number of those people are going to develop problems anyway, particularly if they live in places like Chicago, where they're exposed to significant amounts of environmental pollution. The...

Q. Would you agree that upwards of three-quarters of the people who get lung cancer are smokers, or

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former smokers?
A. I don't think that -- I don't believe that there is definitive evidence for that particular statement.
Q. Could you put a percentage that you believe would be definitive on it?
A. I find that whole area an area of more of obfuscating statistics than illuminated information, scientific information. If you -- when you read the reports that are submitted, the diagnosis of lung cancer is a very, very poorly -- the accuracy of diagnosis is very, very poor. The bias, interestingly enough, with respect to the diagnosis in smokers and nonsmokers is enormous.
The -- it's -- I think we're far from being able to make that kind of statement.
Q. You don't believe that --
A. That's number one. Okay. Not only -- number one. I'm just talking about the numbers where smoking may be involved in any way, shape, or form. To say, then, that smoking somehow, some way or another, in and of itself, as a pure single variable is sufficient to produce those numbers, we don't have anything to document that in medical science.
Q. You don't agree that most people who have lung cancer, get lung cancer, are smokers or former

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smokers?
A. Most. Now we're talking about 50%, huh? I think that that's a possibility.
Q. But you don't agree with it as a fact?
A. I don't -- I'm not sure that at 50% it's an established fact.
Q. You don't agree that most people who get chronic obstructive pulmonary disease are smokers or former smokers?
A. I don't know precisely what my own experience is in that -- in that regard. The -- or, as a matter of fact, the literature in that particular regard. I think that that's a possibility.
Q. But you don't agree that it's a fact?
A. I don't agree that it's an established scientific fact.
Q. Doctor, at any -- well, let me back up.
You had a research fellowship in pathology?
A. I did.
Q. Did your research fellowship involve any issues relating to smoking and health?
A. No, they did not.
Q. What did they involve?
A. My primary work done during my research fellowship was on developing methods for adding

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enzyme tags to proteins.

Q. At any time during your undergraduate, graduate, or postgraduate work and training did you personally participate in any research involving any issue relating to smoking and health?

A. One more time, please.

Q. Sure.

At any time during your undergraduate, graduate, or postgraduate work and training did you personally participate in any research involving any issue involving smoking and health?

MR. CURTIS: Objection to the form of the question. It's overly broad and overly general.

THE WITNESS: Looking at it in the most specific sense of research on smoking, per se, in relationship to cancer, no. Not that I can think of.

BY MR. ORENSTEIN:

Q. Do you have something in mind that maybe isn't directly responsive to the broadness of my question, but you still think would be important information?

A. Again, with respect to a number of areas related to diagnosis of disease, understanding of disease, including diseases that are -- that have been shown to have risk factor of smoking involved, I have been involved in some research associated with -- in those

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areas.
Q. What's that research?
A. Some of which I mentioned before. As a matter of fact, the -- the area of what motivated me to develop -- attempt to develop enzyme tags for proteins was to develop more sensitive assays for oncofetal antigens that could be used for early detection of cancer.
Q. Okay. In that research did you test any hypothesis about the relationship between smoking and health?
A. I didn't -- I didn't pick any -- no.
Q. When were you board certified in clinical pathology?
A. In 1974, I believe.
Q. By clinical pathology again, this is pathology that's done in the laboratory?
A. Correct.
Q. Is your board certification involve any -- strike that. Sorry.
How did you come to be appointed as assistant professor at the University of Miami School of Medicine?
A. I had interviewed for a number of positions in academic medicine. I had already committed myself to

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academic medicine. There -- it was one of half a dozen places in the United States that had an opening at that time. And I interviewed for the position and it seemed to be a good match.

Q. Okay. And you advanced to associate professor?

A. Yes.

Q. What were the criteria for advancing?

A. Productive academician.

Q. Anything more specific than that?

A. The requirements for -- for promotion are -- three things are usually considered: One is the teaching efforts, the second one is research, and the third area is service work. And there was sufficient productivity in the minds of the P&T Committee to recommend my promotion.

Q. P&T means what?

A. Promotion and Tenure.

Q. Does an associate professor have tenure?

A. Not necessarily. In my particular case -- tenure actually came after I became associate professor.

Q. So you do have tenure?

A. Yes.

Q. Okay. You have not advanced to a full professor?

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A. No.
Q. Have you submitted yourself to a committee to seek advancement?
A. I have not.
Q. Why is that?
A. Most of my research and development work at this particular point deals with computerization. Most of it is very, very difficult to -- to extrapolate into a scholarly publication. It's very hard to publish computer programs.
Q. You became an associate professor in 1977, so it's been twenty years?
A. Correct.
Q. You haven't been working with computers that whole time, have you?
A. Yes.
Q. Is that the reason why, in the late '70s you did not seek advancement to full professor?
A. Why in the late '70s?
Q. Yes.
A. That's relatively a short period of time from -- normally you're not considered for promotion until -- until sometime after you've been an associate professor. And -- and so the point at which, in terms of period of time, in my position, to the

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current time, I have had a very large number of service-related responsibilities primarily associated with computerization, and I haven't taken the time to write a bunch of that up. I have not been encouraged to.

Q. Have you sought advancement?

A. No, I have not.

Q. Have you been encouraged not to seek advancement?

A. No, I have not.

Q. In law firms sometimes they do that.

A. Yeah. It's -- well, let me just put it this way: I am very, very much a departmental person. I have certain abilities that no one else in our department happen to have. I have been asked to provide leadership in those particular areas in my department. It has absolutely nothing to do with my compensation, by the way. It's strictly a title. And as a consequence of that I have had no reason to -- to push on that.

Q. Okay. What courses did you teach when you were an assistant professor?

A. The only actual courses that I taught was I taught in -- for a few years we had a Medical Technology School and I taught part of the clinical

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chemistry in the Medical Technology School.

For a number of years we've had a residency program, and during several of those years I actually taught small courses in quality control and laboratory statistics.

For a number of years I gave a few lectures, literally a few lectures, to medical students.

Currently we no longer have a medical technology school. Currently we have abandoned the didactic course that we used to provide our residents in clinical pathology. And currently -- I haven't given a lecture to medical students now in probably five years. So I'm not very actively involved in regular teaching programs. On the other hand, I'm significantly involved in some of the continuing education programs and -- both in terms of supporting those programs and occasionally providing talks.

Q. Aside from the courses you mentioned, understanding you stopped giving courses about five years ago, what other courses did you teach?

A. There are no others.

Q. Okay. Did any of those courses include information on smoking and health?

A. Only incidentally.

Q. How about the continuing education course work

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that you've done over the past few years? Does that include information on smoking and health?

A. No, it does not.

Q. What about epidemiology?

A. Um --

MR. CURTIS: Objection, form of the question. That's ambiguous.

BY MR. ORENSTEIN:

Q. Do you understand the question?

A. No, I really don't understand.

Q. The continuing education courses --

A. Yes.

Q. -- that you told me you are involved in presenting, --

A. Yes.

Q. -- do those courses involve epidemiology?

A. The statistics -- the medical laboratory statistics, absolutely. When we were teaching that -- when I was teaching that on a regular basis. That definitely involved epidemiology, yes, as part of -- part of the program. Problems that we used in statistics and so on.

Q. Uh-huh.

A. How to read a medical -- how to read a medical journal article. What to look for. Hypothesis

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testing. All these sort of things that happen in epidemiological studies.

Q. Uh-huh.

A. Yeah.

Q. Did you ever tell your students that epidemiological studies could not prove that a risk factor causes a disease?

A. I probably never used those particular words.

What I taught them is that statistics don't prove anything except the fitness with respect to a model. Okay. It doesn't make any difference what it is. Whatever those particular statistics are. As a matter of fact, just the simple sort of things that we do in our day-to-day life, which is calculate an average of something. Okay. That's a statistic. And it says something with respect to the model. And in some cases you say what do you mean with respect to the model? Why would you ever want to compute an average? In some particular cases it would actually be silly to compute an average.

If I wanted -- if somebody says, "Well, you know, it's so many miles from here to Chicago." And you say, "Well, what's the average distance?" You can actually calculate that. If you wanted to take somebody who was traveling across that distance and

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you say, "On average, how far were they between --" between, you know, why would you ever want to in some cases? In other cases one is looking at -- at stuff -- you see somebody that -- somebody died at the age of eighty. You say, "What was their average age before they died?" Well, average age was forty. Okay. Because that was -- again, why would you ever want to, for that?

If you have a room full of bankers, and -- and -- and some custodial person walks into the room and you say, "What's the average salary?" Why would you ever want to do that?

So, anyway, we use statistics in an attempt to measure something with respect to something else in the world. And epidemiological studies, by the way they don't -- not everything that epidemiologists do is just statistics. They do a lot of other things besides statistics. But they use statistical models. And statistical models are just numbers that describe other numbers. They don't tell you anything about what the actual facts are regarding the underlying data. They don't tell you anything. Now, you may decide to put an interpretation on those numbers that describe other numbers. That's a completely different process. Now, this is a

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creative process. This is attempting to add meaning, add another dimension. It's not in the numbers themselves. Okay. And this is what I teach.

Q. The numbers portray relationships across the population that's being studied?

A. They portray relationships of -- across the data that's extracted from the populations being studied, correct.

Q. So you can draw conclusions about the population, but not the individuals?

A. You -- if the study is a -- is an accurately-posed study you can draw some conclusions about what the population was, yes.

Q. I'm still trying to find out some more background information about you, but we keep getting drawn off into these other discussions.

Have you ever been a plaintiff in a lawsuit?

A. Been a plaintiff? In a lawsuit.

Q. Do you know what I mean by plaintiff?

A. Yeah, I think so.

Not that I can think of.

Q. Have you ever filed a lawsuit?

A. I have -- I have never filed a lawsuit. I'm just wondering whether or not any particular groups that I've been involved with -- not personally, no.

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Q. Okay.
A. Okay.
Q. Do you have in mind something that -- a group that you belong to, might have done in a lawsuit?
A. There are -- there are a number of groups that I belong to that have at some particular point entertained suits.
Q. Which groups?
A. I belong to one now, Florida Society of Pathologists that's entertaining some suits.
Q. What other groups do you belong to?
A. American Association of Clinical Chemists. American Chemical Society. Actually those are both former -- I belonged to each of those for over twenty years. I don't have current membership in either of those.

Florida Medical Association. Dade County Medical Association. Those are groups.

Q. Any other groups besides the pathologists' association that you know have entertained filing a lawsuit?
A. Of which I'm a direct member, no.
Q. Indirect member?
A. Yes.
Q. What's that?

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A. American Hospital Association.
Q. Have you ever been a defendant in a lawsuit?
A. No, I have not.
Q. Do you have in mind what -- what it means to be a defendant?
A. I do.
Q. Those are not necessarily terms --
A. I wasn't ever named as a defendant in a suit.
Q. What distinction are you drawing there?
A. Again, there have been -- there have been -- there have been some lawsuits in which -- in which I was either tangentially or sometimes more directly involved in the case, to where I conceivably could have been named as a defendant and wasn't. EEOC suits. Several of those.
Q. Anything other than employment-related suits?
A. No. Not that I can think of.
Q. Did those employment suits involve allegations that you or somebody in your office had discriminated against somebody else?
A. Yes.
Q. How many suits -- I shouldn't use the word suits. How many instances like that have there been?
A. I can remember three specific ones where I had some involvement.

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Q. Did they ever go to trial?
A. One of them went to trial.
Q. What was the outcome?
A. The outcome was the -- the employee was told that they had been fairly dismissed by the employer.
Q. Okay.
A. They were for the employer.
Q. Did these actions involve allegations against you specifically or just your department?
A. Not against me specifically.
When you say allegations -- as part of the overall suit, I think probably in the original complaint I was named in one instance, or at least was referred to.
Q. What was it alleged in that instance that you had done?
A. I think contribute to the harassment of an employee.
Q. Was that the suit that went to trial?
A. Yes, it was.
Q. Did you give a deposition in that lawsuit?
A. I did.
Q. Did you testify at trial?
A. I did.
Q. Have you ever been the subject of a disciplinary

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action by the University of Miami?
A. I have not.
Q. Have you ever been the subject of a disciplinary action by any medical licensing board?
A. I have not.
Q. Have you ever been investigated by any medical licensing board with an investigation that did not result in disciplinary action?
A. I have never been investigated by any credentialing board or whatever.
Q. Have you ever been charged with any criminal offense other than a parking ticket or moving violation?
A. No, I have not.
Q. Have you ever been in arrears on any spousal support payment?
A. No, I haven't.
Q. Have you ever declared bankruptcy?
A. No, I haven't.
Q. Have you ever testified before a legislative committee or subcommittee?
A. No. Not directly. Before individuals who were -- I have -- I haven't testified, no.
Q. Okay.
A. Wrong. I have not testified. I have advised

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individuals who were formulating legislative action.
Q. In the state of Florida?
A. In the state of Florida.
Q. Were these elected officials or legislative issues?
A. Both.
Q. What issues have you advised?
A. With respect to laboratory licensing, laboratory regulations. Those are the issues.
Q. Have you ever advised on the question of smoking and health?
A. No, I have not.
Q. Okay. You started mentioning something about your professional associations. Are you a member of the American Lung Association or any of its Florida affiliates?
A. No, I'm not.
Q. Are you a member of the American Heart Association or any of its Florida associates?
A. No.
Q. Are you a member of the American Cancer Society or any of its Florida affiliates?
A. No, I am not.
Q. You are a member of the Florida Medical Association?

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A. I Am.
Q. And the Dade County Medical Association?
A. Yes.
Q. Would you agree with the characterization of the American Lung Association, Heart Association, and the Cancer Society, as being public health organizations?
A. Would I agree that that's the way they are characterized? Certainly they are publicly-minded organizations who I think primary motivation is concern for health.
Q. The public health?
A. Yeah.
Q. Okay. Is it fair to say that the American Lung Association, American Heart Association, and the American Cancer Society have the people's health as their basic responsibility?
MR. CURTIS: I'm going to object to the form of the question in that it's ambiguous.
THE WITNESS: I think it's their concern. I'm not sure I'd use the word responsibility. No, I don't think they adopt that as their fundamental responsibility. I think they adopt it as their primary concern.
BY MR. ORENSTEIN:
Q. If that's their primary concern, they'd put that

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over other considerations, like a profit motive?
A. Yes.
Q. Are there any other professional associations of which you're a member?
A. If I can back up on one thing.
I don't regard any of those organizations that you just mentioned as professional organizations, because they're not.
Q. Okay.
A. Okay? They're not professional organizations. They're composed of nice, little, old ladies that need to find something to do for their community in public-minded individuals. That's what most of the people -- most of the people who are members of all those associations you just mentioned, those are the kind of people who are members. They are not professional people from the medical community or scientific community.
Q. How about their officers?
A. Most of their officers aren't either. Most of their officers, at least at local and state levels, end up being the same sort of people that were just the regular members, only they have demonstrated some administrative and leadership abilities.
Q. Is the Florida Medical Association a

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professional association?

A. Gee. It is professional in the worst sense of the word, yes.

Q. Tell me what you mean by that.

A. I think that there's two things that professional associations do: One is that they -- that they attempt to foster the goals -- the stated service aspects of their profession. And then there are others that are primarily concerned about their members and the profession from the idea that it's self-perpetuating and that where the profession itself ends up being the goal rather than the service associated with the profession.

And, unfortunately, I think most medical societies are more concerned about themselves than they are about their patients.

Q. Is -- does the Florida Medical Association take positions that you're aware of on public policy issues?

A. They do on some.

Q. When they're acting in that capacity are they acting in their role as public health advocates as opposed to the role you just described, as more advocates for their members?

A. I can't attribute the motivation.

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Q. Why not?
A. I don't know the people who are actually responsible for taking those positions well enough to understand exactly what their motivation is.
Q. Tell me about your position as Director of Clinical Chemistry at Jackson Hospital.
A. I ran the Clinical Chemical Laboratory for about five or six years.
Q. How many people did you supervise?
A. We -- at that particular point I had about sixty some people in -- in the laboratory. I also was responsible for a limited period of time for another thirty people in another laboratory.
Q. Is that the Rush Lab?
A. That was the Rush Lab.
Q. Did you see patients in your position as director of those labs?
A. I saw very few patients in connection with my professional responsibilities at that time.
Q. What would be the -- the types of occasions that would call you to see patients since that was not a large part of your practice?
A. What would be the occasion? I made rounds on occasion with the Family Medicine group. I made rounds on a couple of occasions with people in the

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Renal group. I would see patients sometimes as -- as an additional person at conferences.

Q. Uh-huh.

A. But in terms of patients who -- where I was providing direct care for the patients, very, very few of those. Most of it was diagnostic problems or laboratory-related problems.

Q. Diagnostic problems that related to -- that were related to lab issues?

A. And particularly chemistry.

Q. You did help to diagnose patients?

A. Yes.

Q. How many people did you supervise as director of the Blood Gas Laboratory?

A. There were only about eight people in that laboratory. Eight or nine people.

Q. How many people do you supervise in your position as Director of Pathology Computer Services?

A. I have roughly thirty people that I supervise.

Q. And you are Director of Clinical Laboratory Services at Leach Eye Hospital?

A. Yes.

Q. Is that a separate entrepreneurial effort by you?

A. By my department. The -- my department is

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responsible for the laboratory services there. And that's my one direct clinical pathology service. There's only about four people that work in that laboratory. It's a very limited laboratory. But I'm the medical director of that laboratory. The license director of that laboratory.

Q. When you say that's your one direct clinical pathology service -- at the hospital do you mostly supervise others?

A. Mainly what I do in my capacity, dealing with our computer systems, is to provide service to the rest of the department, who in turn provide service to -- to physicians and patients in the hospital.

Q. That's at Jackson?

A. That's correct.

Q. But at the Bascom Palmer --

A. That's part of the -- it's owned by the University of Miami, the Bascom Palmer Hospital is.

Q. I see. So when you talk about your work at Jackson Hospital, you're also talking about your work at the Eye Hospital?

A. Yes. And also at the University of Miami Hospital and Clinics, which is another institution. It's all part of the medical center.

Q. Uh-huh.

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In those facilities do you actually take the blood out of the test tube and put it in the computer and spin it around and read the results? Or are you more providing services to others who do that?

A. I provide the services to people who do that.

Q. You don't yourself, at this point in your career, do any of that hands-on work?

A. No, I don't.

Q. How long has it been since you stopped doing what I call hands-on work?

A. Almost twenty years.

Q. Is my characterization an appropriate one?

A. Yeah. Yeah. Yeah.

Q. The subject came up a few minutes ago about an epidemiological study that you have participated in.

A. Uh-huh.

Q. Tell me about that.

A. What particularly would you like to know? The nature of the study?

Q. When did you start?

A. The study started about eight years ago. And there were on the order of thirty hospitals nationwide, which were solicited by the Center for Disease Control to provide data with respect to the evolving AIDS epidemic. And at that particular point

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Dade County had one of the highest incidence of HIV infection of any place in the United States.

Q. This is around 1990?

A. Yeah.

It was -- it was the -- we had the third largest number of cases for any metropolitan area.

Q. Uh-huh.

A. We had the largest number of heterosexual cases. We had an extraordinary number of -- where we were beginning to see newborn cases. And so the government put together a proposal where they invited responses from hospitals to see if they were willing to participate in a surveillance program. And we put together a proposal and a surveillance program. We put together a proposal -- we were chosen by CDC to provide data to them. And we did that. The program changed somewhat over time. But it was very heavily dependent upon the utilization of computers to provide all the data that they needed for epidemiological studies.

Q. Did you perform that work as part of your work as a professor, or part of your work at the hospital? Or is that indistinguishable?

A. I performed that as -- actually it was both. It was both as part of the University of Miami, as well

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as --
Q. Uh-huh.
A. -- the actual contract was with the University of Miami. But the work was performed at Jackson Memorial Hospital. The surveillance was performed on Jackson Memorial Hospital patients.
Q. You were a co-investigator of that project?
A. Yes.
Q. What does that mean?
A. The person who was named as the -- as the principal investigator actually was our microbiologist and he actually had more day-to-day responsibilities than my responsibilities. And so my responsibility was primarily to support him and so I was designated as a co-investigator.
Q. Is that Dr. Cleary?
A. That was Dr. Cleary, yes.
Q. And your curriculum vitae indicates that you had a 5% effort in that project?
A. Yeah, that's about right.
Q. Let's see if I can ask this right. Does 5% mean 5% of the time you spent working on all the stuff you work on? Or does 5% mean 5% of the time that was spent by you and Dr. Cleary on that project?
A. 5% means 5% of my professional effort.

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Q. What percent of the effort that you and Dr. Cleary carried out was your effort?
A. Initially over half of it. With time, substantially less than half of it.
Q. About what point in time did that drop off?
A. After about two years.
Q. Why did that change?
A. By that time most of the -- most of the -- most of the computer-related support -- most of the programs had been written and were in place and so there really was only the day-to-day supervision that was required to run the program. And our -- or the -- when I talk about the program, I'm talking about the surveillance program. And with a little bit of additional effort, because of problems that would arise here and there.
Q. Is it accurate to say that you worked in collaboration with Dr. Cleary to perform surveillance testing for HIV antibodies on residual serum?
A. That's correct.
Q. Is it accurate to say that you worked in collaboration with Dr. Cleary to obtain clinical information from patients' charts?
A. That's correct.
Q. How do -- how did you go about performing

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surveillance testing for HIV antibodies on residual serum?

A. What is the procedure that we used?

Q. Yes.

A. In the initial phase of the study there were several exclusionary requirements. And so the computer, to the best of its abilities, would exclude all patients that needed to be excluded; as an example, patients who were known to have AIDS were automatically excluded from the study because they only would confound the study. And so there were -- beyond that, there were other patients who did not have exclusionary criteria. The computer system then would make random selections of -- of specimens from that particular group. Provide a pick-up list for a technologist, who would then acquire the specimens. And -- and do some additional research to make sure that the patients weren't excluded. If the patients weren't excluded, then the samples would be tested. And the results of the testing would be reported to the CDC, along with limited amounts of demographic information that did not -- was not sufficient to provide patient identification. It was -- the idea was that it was anonymous specimens that were tested.

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Later on in the study the methodology changed substantially to where all patients basically were eligible, but they needed to be classified as to -- or stratified according to their particular group. And so at that particular point the computer system would collect as much of the information as it could regarding the stratification. And at that particular point the samples were chosen on a purely random basis.

That's pretty much it.

Q. Okay.

A. At that particular point we submitted all of the -- all of the collected data, including the laboratory testing results, were all put together in a packet and were shipped to -- via the Internet to CDC.

Q. Uh-huh.

A. That study just terminated.

Q. Do you know what conclusions the CDC -- strike that.

Do you know what hypotheses the CDC was attempting to test by having you analyze -- collect and analyze this data?

A. There were several. Specifically, their primary concern was to determine the rate of spread of the

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infection. And the second -- secondary concerns were where the increases appeared to be going, which particular age groups, which particular sexes. Which particular areas in which people could be classified in terms of their presenting disease process.

Q. What do you mean by that?

A. Whether they were an obstetric patient. Whether they were a surgical patient. Whether they were an accident victim. Whether they were -- whatever it was. This was an additional stratification in addition to age and sex.

Q. Uh-huh. This was an epidemiological survey?

A. Yes.

Q. Was it a statistical survey?

A. Yes.

Q. Did you believe that the information you were providing to the CDC was useful to them in testing their hypotheses?

A. Absolutely.

Q. Now let's go back to the initial phase of the study where one of your duties was to exclude people who fell into certain categories.

A. Correct.

Q. How did you do that?

A. First of all we were given a stratification

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based upon age and sex, so we were told to select only a certain number of specimens in each particular age and sex group. So part of the exclusion for a particular patient could be that that particular group was already filled with -- because we would in that particular stratification have so many each month, where we would fill it up.

There were certain -- certain diseases which were known to be -- and certain presentations which were known to be associated with very high risk of the patient being infected with HIV; specifically a intravenous drug user; specifically a patient who had recurrent pneumonia; specifically a patient who had Kaposi's sarcoma, or a lot of other associated phenomena, medically-associated phenomena with respect to AIDS.

Patients who had any of those criteria were excluded.

Q. How did you know if they had those criteria?

A. Based upon medical admitting data. Based upon laboratory testing itself. Based upon examination of the medical record. All of those things.

Q. Did you and Dr. Cleary review the medical admitting data and the medical records to make those determinations?

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A. Correct.
Q. Did you have people in your office who assisted you in that?
A. Yes, we did. He did. I didn't have anyone in my particular area. But we trained some technicians to assist in that.
Q. Some of the work was done by technicians?
A. Correct.
Q. They were to review the charts?
A. And the medical computer data.
Q. And they would pull the information off the charts they thought was needed to make the decision, to exclude or not to exclude?
A. Correct.
Q. Did that include diagnosis information?
A. Yes, it did.
Q. Were you looking at the charts themselves? Or were you looking at claims data about the charts?
A. Looking at the charts themselves and looking in -- more importantly, in the computer system.
We have a clinical computer system that reports quite a bit of information about patient visits.
Q. How does your computer system do that?
A. There are several places in the computer system where diagnostic information is recorded.

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For every emergency room or out-patient visit there is nominally some associated diagnosis, as ICD-9 code that's entered -- associated with that particular visit.

At the time of admission there is a free text admitting diagnosis, which is submitted by the admitting physician.

And at the time of discharge -- there are a series of diagnoses which have been abstracted from the medical chart, which are listed on the discharge face sheet.

Q. And that all goes into the computer?

A. That all goes into the computer system.

Q. Who does that abstracting?

A. Medical abstractors.

Q. Do they assign a code number to the reasons for discharge?

A. Yes, they do.

Q. Are those numbers based on ICD-9 codes?

A. Yes, they are.

Q. Okay. So which information from the computer system were you extracting in order to make the decision exclude or not exclude in the Sentinel Surveillance project?

A. Lots of that. In addition, the -- we had --

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there was some specific laboratory data, by the way, in addition to that, that served as exclusionary criteria.

Q. I think you mentioned that.

A. Okay.

So that was also looked at.

The -- but basically we looked at all of that particular information, all that data that I mentioned.

Q. Sure.

So programs would be written to say -- persistent pneumonia is ICD-9 code X?

A. Yeah.

Q. If the computer has extracted that from this patient's record, then the patient is excluded?

A. Yeah.

And more important than that, if the patient would have been readmitted to a pulmonary service, for example, another place in which you'd get that information, those patients were automatically excluded.

Q. Again, from ICD-9 codes?

A. The pulmonary service is not ICD-9 coded. If you are seen as a patient, as a pulmonary disease patient, then -- that's because the attending

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provides that kind of care.
Q. Okay. So you would be looking at the information about the place of service?
A. We did. That was another -- another significant attribute.
Q. Information about the -- any lab work that had been done?
A. Correct.
Q. That was entered into the computer?
A. Yeah.
There was specific laboratory work. Not any laboratory work. But specific laboratory work.
Q. Thank you for clarifying.
ICD-9 code information that reflected patient diagnosis information?
A. Correct.
Q. Let's see if there's anything else.
Did you actually review patient charts or --
A. Yes, we did.
Q. -- or did you just take what --
A. What happened was whenever we ran into some dilemmas, the -- with respect to a patient, whether a patient should be excluded or not, whether or not...
As an example, one of the cases in which you would rule out -- rule out PCP. Okay? Ordinarily

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whenever we saw that --

The reason, by the way, no ICD-9 diagnosis that corresponds to PCP.

But whenever we saw that, we knew that this was probably a hedge word to say that they expected the patient had aides. And -- and so we would look to see whether or not we -- there was anything to indicate from pulmonary cultures or whatever else it is that they were pursuing that diagnosis. If so, then we assumed that the diagnosis was suspected pneumonia. Okay. And probably not only suspected pneumonia, but pneumonia of the type that you would find in HIV-infected patients. And so those patients would be excluded.

Q. Those were the occasional instances where you felt further chart review was necessary?

A. Yeah. Those -- yeah. Whenever we didn't have definitive diagnosis. Or vague diagnosis. I mean diagnosis like chest pains wasn't sufficient. We needed to have something more specific than that.

Q. Sure.

Would the computer consider all these pieces of information together, or were there edits that said --

A. The computer probably had -- maybe only 75% of

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the information was even available to the computer system. The rest of it was basically human -- manually collected. And some of it was actually theoretically available in the computer system, but it was only available by human interaction to extract the information. And so there was human oversight associated with all of that.

Q. Sure.

Could the computer exclude someone based on a diagnoses that was reflected in an ICD-9 code alone?

A. I'm sure that it did. I'm sure -- I can't recall right now precisely what they were. But I do know that we coded certain things to where if this particular code comes up, --

Q. Automatic?

A. Automatic exclusion. Or automatic classification, as the study went on. Okay?

Q. There wouldn't be a need to have a lab result confirming that?

A. Not for the purposes of this study, I don't think so.

Q. Okay. Let's talk, then, about the second phase, where you weren't excluding people, but you were classifying them.

A. Uh-huh.

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Q. Is that based on these same types of information?
A. Same types of information, yes.
Q. Place of service?
A. Correct.
Q. ICD-9 code?
A. Correct.
Q. Laboratory data?
A. Correct.
Q. The occasional manual chart review?
A. Yes.

As a matter of fact, there were certain pieces of information that we needed in that second phase, which were only available by -- from the chart. We couldn't get them because they weren't entered in the computer system. So we actually had to look at the chart.

Q. In every instance?
A. In every instance.
Q. Did you do some of that?
A. I did do a little of it to begin with, until we had it well set up, until we adequately trained a technician for that particular task.
Q. As far as the accuracy of the diagnosis information, did you set out to do any verification

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of that accuracy?
A. No. We never, ever got to the point of independently verifying the classifications. We were -- we were audited a couple of times by CDC, where they sent people down, looked at how we collected. It was really a process audit rather than a separate sample audit.
Q. Uh-huh.
A. And they were satisfied with what we were doing.
MR. ORENSTEIN: Let's go off the record for a second. Just trying --
MR. CURTIS: Could we take --
MR. ORENSTEIN: Sure. Take a five-minute break?
(Recess taken.)
(Exhibit 3111 marked for identification.)
MR. ORENSTEIN: Back on the record.
BY MR. ORENSTEIN:
Q. Doctor, during the break I had marked Exhibit 3111, which I'm handing to you. This is a twelve-page document titled, "Methods of Surveillance for HIV Infection at U.S. Sentinel Hospitals; Special Section - The HIV Seroprevalence Surveys."
A. Uh-huh.
Q. If you would just look at page five of the

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document 3111. At the bottom of that page there are four examples of reasons why specimens would be excluded.

A. Correct.

Q. Do you recognize those as the exclusionary criteria that your hospital applied and participated in this project?

A. They certainly were included, but I am almost certain that our list was substantially larger than that.

Q. Okay. In the information --

A. As a matter of fact, among the following groups, general groups of ineligible conditions, we had other more specific conditions.

Q. Thank you.

Among the information that was extrapolated from the patient chart that you utilized in making decisions to exclude or include, did that information include patients -- self-reported information?

A. There's no category in which self-reported information was placed; in other words, this -- one of the so-called self-reported information is patient history and symptoms. These are the two things that one solicits from patients. And -- we didn't have a category where that information existed. So -- but I

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am absolutely certain that history, patient history and patient symptoms were ultimately digested by the physicians who saw the patients and influenced their decision for classifying the patient.

Some things are pretty easy, like gunshot and knife wounds. "Doctor, I've got this big hole in me."

Q. Information from the patients, by way of history and symptoms, influenced the physicians in coming up with the ultimate diagnosis?

A. I'm sure.

Q. And in coming up with the diagnosis that was classified as an ICD-9 code that went into your computer?

A. Yes.

Q. Okay.

A. The process is very circuitous, but yes.

Q. How do you mean?

A. Physicians themselves don't -- rarely, rarely ever supply ICD-9 codes. As a matter of fact, it's pretty uncommon for a physician to know more than two or three of them. And those are only the ones that relate most intimately to their own specialty and practice. And there are many physicians who don't know any codes.

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Q. Somebody at the facility is trained to take the physician diagnostic information and translate it into an ICD-9 code?

A. Someone is hired to do that and nominally they're trained.

Q. Let's go back to your CV. I've been asking you about your professional experience.

A. Okay.

Q. I'll ask -- numbered article -- numbered item fifteen under PROFESSIONAL EXPERIENCE is Pathology, Jackson Memorial Hospital, Director of Chemistry, Director of Rush Lab, Director of Blood Gas Laboratory, Director of Pathology Computer Services. Then Director of Clinical Laboratory Services at the Eye hospital.

Did I hear you say before that you were the medical director of the Eye Hospital?

A. No. Just the laboratory. I am referring specifically to -- my responsibilities specifically limited to the laboratory. It does not even include all of the areas of clinical laboratory. The Microbiology Laboratory is supervised by somebody else.

Q. In these positions you obviously work with diagnosis information from other health care

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professionals.
A. Yes.
Q. And you accept that information without the need to verify it?
A. In most cases, yes.
Q. And you --
A. Most cases it comes from clinicians. In most cases it's stated in English.
Q. You obviously -- in those positions you obviously work with patients self-reported information about their health?
A. Very little. Very little.
Q. That information would go into the diagnosis that you would get from the health care professional?
A. Correct. So it's already been processed before we get that. Occasionally we'll get that. You know, I mean what happens is a patient who has previously been treated for a disease and is seen now by another physician and the patient said, "Doctor, I had some particular disorder, I had cancer of -- cancer of the breast, and I had a lumpectomy in such and such a year." The doctor in that particular case can easily verify that by physical examination. In other instances it's not simply a matter of verification by physical examination or sometimes even by x-ray. And

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so that you accept that by patient history. So that you say, diagnosis of so and so per history. And -- and I do get that sort of information. And sometimes that ends up being the primary reason for a visit. The patient is now concerned about, "Has my disease come back?" Or whatever.

Q. So in your practice you rely on diagnoses made by other physicians?

A. Yes. I -- I rely on information provided by other physicians. Sometimes it's in the form of diagnoses. Normally when I get it in the form of diagnoses, I regard that as a form of information, rather than a definitive diagnoses.

Q. So do you go back and re-examine the patient?

A. Re-examine the data very often. I mean whenever -- I practically never accept a diagnosis -- first of all, there are very few clinicians who would accept a diagnosis from me without critically examining it; and by the same token, I'd rarely accept another physican's diagnoses without examining it.

Q. Sure.

In your patient practice?

A. Yeah.

Q. In the epidemiological work you described how

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you accepted the information that went into the computer?

A. You know, most epidemiology work, the idea is not that you're ever 100% accurate with anything. There's lots of things that one attempts to satisfy from epidemiological studies. One of the things that one attempts most to satisfy is just trying to understand relationships of variables that are a part of the study. And whether or not the actual numbers that come out with respect to those particular variables are accurate to one decimal places, two decimal places, three decimal places, isn't too relevant for most epidemiological work.

Q. Why were you providing the information to the Centers for Disease Control from your study?

A. Why were we providing it?

Q. Yes.

A. There -- there was a significant concern with respect to the relative rates in various communities. It was apparent to the CDC, from the inception of the study, that the study was going to be significantly biased. And as a matter of fact, one of the things that we reported to the CDC in terms of our data were the percentage of the patients which were indigent, the percentage which were

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Medicaid, the percentage which were Medicare, and other third-party payers, and the percentage that were private pay. We had to provide that information with respect to the patient population we served. We had to provide any information that indicated there may be a shift with respect to the patient population we served.

Because what they were interested in was not absolute rates, but relative rates. So they wanted to find hospitals who had a stable population. We had had a relatively stable population in our hospital for a number of years, had no reason to expect that the population was going to change radically over the course of the time in which we were doing the study. So whether our number was twenty, and someone else's number five, and someone else's number was two, they were able to tell, I think with very, very good statistical degree of confidence, whether or not things were going up or going down in Miami, and which particular groups they were going up or going down in, and that's what they were interested in.

Q. Your information was helpful to them?

A. I believe so. They certainly continued the study for -- they continued and extended the study.

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Q. Uh-huh.
A. And ultimately a number of hospitals were -- dropped out, and there were only a relatively small number of hospitals in the final phase of it. We were one of them, so they must have regarded our work as being useful.
Q. And you regarded it as useful?
A. I regarded the work that we were doing as good quality work. How useful it was really depended on the way in which it could be utilized by the CDC.

At some particular point we had discussed with the CDC of actually extending utility of the data, which I felt we could have done, but we finally didn't have time to put together a proposal to extend it.

The government was -- this was a very touchy study. There were critics of this particular study. A number of people felt it was immoral.
Q. In what way did you propose to extend the utility of the data?
A. We proposed to be more immoral in the sense that we would actually collect a lot more scientific information associated with it. And that we would then hide that information, so that by the time it leaked it would be sufficiently washed by the time it

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reached the federal government. That there would be no way in which the data itself could be identified with a particular patient.

Q. Okay.

A. That's basically what the proposal was.

Q. Some of the blindness of the investigation at your end would be eliminated, but --

A. Correct.

Q. -- but you would reinstate it before the data got to the federal government?

A. No. We would amplify the amount of information that was present in each particular study, still maintaining -- maintaining the level at which -- at which confidentiality would be preserved.

But some of that would be by us, to some extent unblinding the data for collection. So it wouldn't -- the federal government was clear, their conscience was clear. They had nothing that they could use that could go back to identify.

We were clear in the sense that we never would combine the definitive results in one area, with the definitive results in another area.

So there would only be a marriage once it finally got to the CDC. But at that point the identity of the patient would be completely washed

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out.

Q. Aside from the use of ICD-9 codes that you described in connection with this Sentinel Survey, in what other ways have you had occasion to use ICD-9 codes?

A. I mentioned earlier that our billing systems are totally dependent upon those.

The other thing is before ICD-9 was used for billing, it was used primarily for epidemiological work in hospitals, understanding the kind of patients and for research work in academic centers.

And I've been a member of the Medical Records Committee at my hospital for twenty-seven years. And -- or about that. And -- and that's the coding system that's utilized by most hospitals.

And so I was familiar with all those efforts. That it existed prior to the time in which the codes became required information associated with third-party billing.

Q. Those codes are still used today in epidemiological research?

A. Yeah, they are.

Q. Including the survey that you described that you participated in?

A. Yeah. Of course, we used other information

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besides just those codes, as we discussed.
Q. Uh-huh. When you use ICD-9 codes in your own practice do you consider them unreliable?
A. Absolutely. They're terrible things.
Q. So when you bill third-parties for reimbursement, are you using information that you consider to be unreliable?
A. Absolutely.
Q. Okay.
A. And I do that with a totally clear conscience.
Q. Okay.
A. I did the work. I did good quality work. My department did the work, they did clear-quality work. Whether we provide a diagnosis, or not a diagnosis, doesn't have a damn thing to do with whether or not we did or whether or not what we did was required, whether or not there was medical utility. Whatever it was. It's a stupid-ass requirement that people have put on us to make our lives worse. Okay? And so I could care less about the accuracy of those numbers. And no one else cares about the accuracy of those numbers either. They don't even care about it in particular cases where -- where nominally there's the connection to the reimbursement, specific reimbursement.

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The hospital cares about it. The Finance Department of the hospital cares about it. But the physicians, and the nurses, and the patients, they don't care about it.

Q. Do you use ICD-9 codes in billing the federal government for services?

A. Yes.

Q. Do you --

A. Required.

Q. Do you use --

A. You can't send a bill without it.

Q. Do you use ICD-9 codes in billing the state of Florida for services?

A. Yes.

You can't -- required. Can't send a bill without it. Whether it makes any sense or not it -- as a matter of fact, if you will see in -- in this report, I believe it's in the report of -- of -- we talked about earlier, of -- of Zeger, Wyant and Miller. That they completely ignored ICD-9 diagnoses provided by laboratories in the State of Minnesota's evaluation. Because they're so unreliable.

Q. Where does it say that in their report?

A. I think I can find it in two minutes. I hope I can find it in two minutes. If this is one of those

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things where I can't find it, you're going to have to kick me really hard.

(Reviewing document.)

On page nineteen, lab and x-ray screens: "Rule outs and possibles tend to be more common with bills for lab work or diagnostic imaging. The whole point of getting such work or imaging done is often to reach a final diagnosis. At the time a bill is submitted for this kind of work, a final diagnosis may not have been made. In fact, making such a diagnosis may be the responsibility of a different provider than the one billing for the lab work or x-rays. Without further confirmation, we disregard all ICD-9 codes indicating a major smoking attributable disease that come from bills for lab work, x-rays, or other diagnostic imaging."

Q. So your conclusion is that they --

A. I conclude exactly what they conclude. They're notoriously unreliable.

And in addition to that, the office visit that generated the laboratory work, that now goes independently, had the same atrocious diagnosis on it because they had to stick on something.

Q. So it's not just the lab work that --

A. It's not just the lab work. It's erroneous.

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Q. You consider diagnostic information from office visits to be recorded in an atrocious manner in ICD-9 codes?

A. Let's qualify that.

A patient comes in for initial office visit. Vague symptoms. The doctor's got no clue as to really what the patient's problem is. ICD-9 coding, while it allows for a certain amount of vague diagnoses, it's not very good in dealing with that. If the doctor says use code V72, or something like that, which stands for laboratory examination, and just sends off something to the laboratory, the laboratory is not going to get reimbursed. And so the doctor has got to put a code on it. So the doctor says -- as a matter of fact, the doctor probably won't even do it. The doctor's office manager will say, oh, let me see now. We'll use this code or we'll use this code. They've got a list of codes that are there; maybe they fit, maybe they don't fit. And they put that down on the patient's requisition, send it off to the laboratory, send it to the hospital, wherever it's going to be. It now gets recorded in that particular system and, furthermore, it's now recorded in the patient's chart. Okay.

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Now, when the time comes for the doctor's office manager to send a bill in to somebody, they say what diagnosis? Well, if the doctor hasn't changed the diagnosis and added anything, which they may not have done because, hey, has to get the laboratory results back before he gets a diagnosis, right? But the laboratory can't bill for the work because it needs a diagnosis. The doctor can't bill for the office visit because they need a diagnosis. So they both make up a diagnosis, or they've taken the doctor's made-up diagnosis and send it in. Okay. So there's a lot of noise in those kinds of diagnosis. Lots. I mean they're not being utilized for the purpose of attempting to provide a classification of medical information about the patient. Okay. They're not even being attempted in that.

The coding system itself is completely inappropriate to the way it's being utilized in medicine today. Second major problem.

Q. The computer system which you described that Jackson Hospital has whereby information gets extracted from patients' charts, put into the computer system, under various categories, including categorization by ICD-9 code, were you part of designing that system?

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A. For a number of years I was on the Medical Information System Committee. And so I had some voice associated with the way that worked.

Q. Why does the hospital have that system?

A. They need to get paid, too. Okay?

The interesting thing is at one particular point there was a serious consideration at a number of hospitals for changing the coding systems that were used. As a matter of fact, many hospitals used more than one coding system for the classification of their diseases. Some of which were very abbreviated simple systems, some of which were more complicated, and some of which were ICD-9 based codes.

ICD-9 was one of the larger codes, somebody put it together for a purpose completely unrelated to the practice of medicine in the United States. And -- and medical records technicians recognized the serious problems there were associated with the coding system. Looked at adopting different coding systems. By the time they got around to doing that, lo and behold, third-party payers started requiring diagnosis information. And ultimately, in around 1983, whenever it was, when the Medicare converted to a respective payment system, you had to use ICD-9 codes to generate and validate DRGs. And so then we

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got stuck.

It was a bad choice, but it maybe was the best of the choices that were available. But still, it's nothing that -- nothing that a scientist would ever have adopted.

Q. Uh-huh.

A. It's fundamentally -- it's sort of an epidemiological code, it's sort of a political code. It's sort of a reimbursement code. The one thing that it's not--it's not a nosological classification of site of disease, of disease process, of etiology, of function. Those are the primary things that we look at when we look at attributes of disease. And it doesn't do any of them well.

Q. I apologize, but could you define nosological for me?

A. Okay.

Q. Someone with a big nose wants to know the answer to that question. It caught my attention.

A. Nosology.

Q. I might be accused of being --

A. As I've used the term. I'm not sure I've ever looked it up.

But as I use the term and as I understand the term by other people who use it, it stands for --

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used for scientific classification, in this case, of disease.

Q. Okay. If one of the defendants' experts in this case was attempting to measure the use of medical services based on claims data, would that be unreliable?

A. I'm sorry. What would? Would what be unreliable?

Q. Would measuring the use of medical services based on claims data be unreliable?

MR. CURTIS: I'm going to object to the form of the question. That's overly broad.

THE WITNESS: I think I know what he means, though, and I have no problems answering it. I'm going to qualify my answer.

Third-party reimbursement very often is related to a different coding system. The services are normally identified as CPT codes. And CPT 4, or whatever else it is, is the more common -- I guess now -- we now know of them as CPT-94, or whatever -- 97, whatever current -- the new one comes out every year. The -- well, at least has for the last few years. And we're now using CPT-97.

Claims base data has two pieces of information in the claim: One is the ICD-9 diagnosis; the second

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thing is what my claim is for purposes of reimbursement, which is based on CPT codes. So now when you --

Now, let's ask your question again.

BY MR. ORENSTEIN:

Q. Well, we've been discussing --

A. CPT codes are accurate because that's what somebody said I did this for the patient. When I send in a claim with a CPT code that said we did a glucose test on this patient, we did a glucose test. So the -- the CPT code is an accurate statement as to what actually occurred as a procedure associated with that particular patient encounter.

The ICD-9 code, which presumably represents the medical utility of that particular service, notoriously inaccurate.

Q. When you bill the federal government you said you used ICD-9 codes; correct?

A. Yeah. As -- that -- that's on one side of the bill. There's another column of the bill, which includes CPT codes.

See, you don't bill a patient for a disease. You bill them for a service. You bill them for an office visit. You bill them for an x-ray. You bill them for a laboratory test. You bill them for a

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drug. You bill them for these kinds of things.

There's specific -- for physicians there are specific codes and as institutions there are specific codes, procedure codes, that are used for the claim as to what services were rendered. Okay. So both information goes on the bill.

Q. So if you were looking at utilization of services, --

A. Uh-huh.

Q. -- CPT information --

A. Yes.

Q. -- would be used?

A. Yes.

Q. And is that accurate?

A. The CPT information is accurate.

Q. ICD-9 code information would not be accurate?

A. Not accurate.

Q. For what purpose do you include ICD-9 information in your bills?

A. To get paid. Just to get paid.

Q. Why couldn't you be paid simply on the basis of a CPT code?

A. They won't pay you. They require it. They will reject your claim. That's why. And so, you know, what a lot of the medical code-ists -- they just

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stick those things in so that the hospital gets paid.
Q. Are you familiar with the eighth revision, H-ICDA codes? Are you familiar with those?
A. With the which ones?
Q. H-ICDA codes?
A. Yeah.
Q. Is that a forerunner of ICD-9 codes?
A. Yeah. And then there's actually more beyond that.
Q. Okay. Your opinion --
A. The last one was ICD-9M and then that got substantially revised. I don't know whether it's name changed, but it underwent a large change in the last year.
Q. If you were trying to pick diagnostic categories as likely smoking-related, with these H-ICDA codes be appropriate?
A. They're not very good.
Q. How so?
A. Let me give you the problem the medical coder has.

The medical coder looks in the code book, including in the instruction books associated with the code book. Sees a large number of abbreviations, which they may or may not know what they mean. They

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see some words that they may or may not be familiar with. They look for something that matches the physician's description of the patient's diagnosis and they don't find it. And so they get something that seems close. And this is one of the problems, and this is, again, if you -- in references that we've provided you, but I can give you a lot of it from personal experience. The doctor says, "Rule out pneumonia." Okay. That's going to be translated as pneumonia. You know, that's 650. Okay. You know, that's -- whatever the number is. And the -- because that's the closest thing to whatever the doctor has. Now the fact that, in fact, you know, maybe the patient inhaled something or another, and came in coughing and complaining about chest pain or whatever else it is, may have prompted the physician to say rule out pneumonia. And this is -- this is the way misinformation gets passed along in terms of coding systems.

Q. And the concerns that you've expressed about ICD-9 codes are the same concerns you would express about these H-ICDA codes?

A. Oh yeah. Yeah.

Q. Going back to your curriculum vitae, you have identified a number of consultant projects.

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A. Yeah.
Q. This is on pages five and six.
A. Okay.
Q. Are there any other organizations or groups or companies to which you've been a consultant besides the ones listed here?
A. Yeah. But the -- these are the ones I get paid for. Or the department got paid for. Again, this is not anything that I get paid for, but the -- the --
What page was that?
Q. This is on pages five and six of the curriculum vitae.
A. Page numbers on our particular pages are not showing up so well.
Q. Bottom of five and top of six.
A. Okay.
Consultants -- yeah, these are -- these were instances in which I have worked for other companies. Yeah. On behalf of the department.
Q. Sure. What other consulting have you done where you haven't been paid?
A. There are a number of biomedical companies in the Miami area. I'm friends with people, investigators, and so on in those particular companies.

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Dade Division -- it's now called Dade International. Previously was part of Baxter and previously to that was part of American Hospital Supply. They're a significant employer in Dade County and I've had a close scientific relationship with a number of people in that particular company. As a matter of fact, I may even have done something for pay for -- I did at one point. The Paramax Division. But I've worked with them on a lot of other projects in the Miami area.

The Coulter Corporation is a very, very important corporation. I don't know whether you saw the financial paper -- I didn't even see it yesterday, they were acquired by Beckman. And they hire eight thousand people in Dade County. And manufacture biomedical instrumentation. I've worked with them on projects.

Q. Has any of your consulting work, aside from the consulting work you've done on this case, involved issues involving smoking and health?

A. We -- part of what we do with respect to Coulter, is we provide all of their routine medical laboratory surveillance and we serve -- we review any of the abnormal data associated with that. And so I'm sure indirectly some of this has to do with --

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may have something to do with smoking-related illness.

Q. Just in that some of their --

A. Employees.

Q. Some of their employees may be ill?

A. Yeah.

Q. Okay. But you don't consult on a -- aside from your work in this case, you don't consult on the question of whether smoking causes disease?

A. No. No. Huh-uh. Not in any of these instances --

Q. Uh-huh.

A. -- was there an issue of that --

Q. Do you consult on the -- or have you consulted on the accuracy of ICD-9 codes?

A. I've never done any consulting on that, no.

Q. Do you consult on the accuracy of diagnosis information?

A. Not consulting. I've got some collaborative projects at the Sylvester Cancer Center where -- when I refer to the -- you may see some references to the University of Miami Hospital and Clinics/SCCC. I'm not sure whether that's in here or not. But the -- the -- I've talked to some investigators over there who have certain classification systems that

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they use for research purposes. And looking at -- establishing alternative systems for classifying and coding pathology data. That's a beginning project. But that's not consultation. That's research. Collaboration.

Q. Have they accepted your advice?

A. Yeah. Yeah. We're going to work -- we're going to do this.

Q. Okay. Does any of your consulting work involve issues relating to bias in diagnosis?

A. No, I don't think any specific -- any of the consulting work that's identified here? No.

Q. How about the once where you weren't reimbursed, but you've identified those for me today?

A. No. Not there either.

There was -- we had a -- we had a project with -- with Dade regarding diagnostic accuracy of a particular test kit, that they were in -- that they were looking at marketing. And they asked us to evaluate it for that particular purpose. And we did. And if so -- in that narrow instance we actually verified diagnoses by chart review in patients that tested positive by either of two different approaches or by discharge diagnosis.

Q. Okay. What did you find?

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A. Among the areas of clinical diagnosis today, where the accuracy is pretty good with respect to acute myocardial infarction, we had some fairly decent electrophysiological tests, electrocardiograms, echocardiograms, monitors, halter monitors, that sort of thing, for helping out with the diagnosis in cardiac disease. We have some very sophisticated clinical laboratory tests, two of which have just been added in the last couple of years. And then we've become a much more sophisticated on a pure medical basis, electrocardiograms. The -- and, of course, then finally there's a tremendous amount of intervention that goes on in that particular case with respect to cardiac catheterization studies. It's the area of medical diagnosis that's become much, much more accurate at the level of a discharge diagnosis for patients who have been completely worked up.

The interesting thing is we're not much better than we were twenty years ago with diagnostic accuracy based on patient history and symptomatology when they first present. And so there is a major need for categorizing patients quickly into those who need to be treated for acute myocardial infarction and those that need to be sent home. And like I say,

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we're getting much better at that. And the laboratory plays an important role in that diagnosis.

Q. I think you testified earlier that you've had patients who have had certain conditions and indicated a willingness to stop smoking. You've advised them to stop smoking. Have you ever had experience where they weren't able to?

A. No.

Q. Never?

A. Not to my recollection. I've never been told by a patient, "Doctor, I just can't quit." Maybe they don't like to tell doctors that, if they can't. But at least I've never been told that.

Q. Is it your opinion that anyone who wants to stop smoking can stop smoking?

A. Yes.

Q. Do you have an opinion based on your training and experience whether smoking is addictive?

A. Yes.

Q. What's your opinion?

A. It's not addictive.

Q. How --

A. I really object to the bastardization of the word addiction. I mean I grew up where addiction meant something, okay? And it meant something with

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respect to hard drugs, such as heroin or cocaine. All right. I have seen heroin addicts. I have seen cocaine addicts. I have yet to see the first smoking addict.

Q. Do you believe that nicotine is addictive?

A. No, I don't.

Q. It's your opinion that it's not addictive?

A. It is my opinion that it's not addictive.

Q. What do you base that opinion on?

A. Both professional and personal experience, with friends, with myself. With whatever.

Q. Have you ever smoked?

A. I did.

Q. When did you start smoking?

A. When I was roughly -- early twenties.

Q. For how long did you smoke?

A. Almost thirty years.

Q. Is there a pack-a-day --

A. During a part of that interval.

Q. -- during part of that interval.

A. I probably never got much over a pack a day, except for a very brief interval of time. And then for the last eight or nine years I was down to just a few cigarettes a day, every day. And finally they -- said you could no longer smoke in the hospital and it

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wasn't worth the hassle, so I quit.
Q. Do you know why the hospital has that policy?
A. Yeah. They have that policy because a number of nonsmokers object to any smoke in the hospital. That's the primary reason why they do it.
There is also some good reasons why in certain areas, like where oxygen is in use, it's a danger -- physical danger. And in particular patient cases where there may be a large number of respiratory patients. It also is contraindicated in that setting. So there's some -- some reasons.
Q. But --
A. But the major reason is because of the objection to -- of nonsmokers who don't like smoke in their work place. And I believe they have the right to make that objection.
Q. Do you believe that -- well, you're a nonsmoker now. Do you believe that's purely an aesthetic objection or are there health reasons?
A. For some -- for some it was a health reason. I mean if you have a person who, again, is an example of -- sensitive asthmatic, that's in an office where people are allowed to smoke, that person is going to be miserable in the work place and they shouldn't be subjected to that.

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Q. So you believe that secondhand smoke causes health problems beyond the examples you've already given in the pre-existing illness?
A. I think the evidence for that is extraordinarily, extraordinarily weak.
Q. How many times did you try to quit?
A. How many times did I try to quit?
Q. (Nodding.)
A. Once.
Q. Did you go cold turkey?
A. Yeah.
Q. You never smoked again?
A. No. Yeah, I've had a half a dozen cigarettes since I quit.
Q. Do you smoke cigars?
A. I've had one cigar since I quit.
Q. Is your lab a smoke-free facility?
A. Yes, it is.
Q. Why is that?
A. Labs have been smoke-free facilities for a very long time. Interestingly, not because of the risk associated with any sort of pulmonary disease; the primary concern in medical laboratories, why people were not allowed to smoke, was because of hepatitis. If you smoked, you put your cigarette somewhere. If

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you smoke, you put your hands on your cigarette. And there have been instances of people who have been known to have -- to have infected themselves in clinical laboratories. And beginning about 197O the clinical laboratory standards of the College of American Pathologists forbad any smoking in any laboratories where patient specimens were handled. And so we weren't allowed to smoke in laboratories for a long time before the issue of secondhand smoke or the issue of people being bothered by smoke and so on arose.

Q. Beyond the hepatitis reasons you've just expressed today, are there other health reasons why your lab is smoke-free?

A. Yeah.

Q. What are those?

A. AIDS.

Q. And how does smoking affect that?

A. Same problem. When we were talking about working in an area that may be contaminated by blood and secretions and put that in your mouth, that's not a good idea.

Q. Beyond AIDS and hepatitis, are there other health reasons?

A. I don't think that -- at least not in our

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facility, that the -- that the motivation has anything to do with doing good for the smoking employee. It's for the nonsmoking employee.

Q. For the health of the nonsmoking employee?

A. Yeah.

Q. Have you ever discussed with a family member anything about smoking and health?

A. Interestingly not. I don't think I ever have.

Q. Does your wife smoke?

A. No, she doesn't. Never did.

Her brother and sister both smoked.

My parents didn't smoke.

And they both stopped smoking, for whatever reason. I don't know.

Q. Are they both alive?

A. Yeah.

Q. Do either of them have cancer?

A. No.

Q. Sorry to ask such a personal question.

Doctor, on your CV you list a number of University committees and administrative responsibilities, one of which was 1976 and 1977, you were on the Comprehensive Cancer Center Research Committee?

A. Right.

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Q. What did you do there?
A. Advised with respect to research projects. At the end of that time they disbanded the committee and ultimately another one was formed at some later date.
Q. Did you advise on any projects related to investigating the relationship between smoking and health?
A. I am absolutely certain that at that particular point that there was research that involved various forms of cancer, some of which have purported to have linkages to smoking, yeah. Part of what happened on that.
Q. Did you ever have any discussions while you were a member of that committee with anyone regarding the causes of cancer?
A. Not that I recall. And it really wasn't the sort of thing that was apt to be discussed in -- in those meetings.
Q. Is there a successor committee today?
A. Yes, there is.
Q. If you were told that the chair of that committee today had the opinion that cigarette smoking causes cancer, would you disagree with that person?
A. I'd say they're entitled to their opinion.

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Q. Would you disagree with that person?
A. Would I disagree with that person?
Q. (Nodding.)
A. Depends on how it was expressed. If it was, as you said it, and if they had exactly the same sort of view that you had expressed in that, I would feel like they prejudged the information that's available today.
Q. Would you disagree with that person?
A. I would disagree with that person, yes.
Q. Besides your department chairman, is there anybody else among your colleagues at the University of Miami that knows you're aware -- that knows that you're testifying as an expert witness for the tobacco companies?
A. I'm not aware of anyone who does.
Q. Does Dr. Cleary know?
A. I don't think so.
Q. You mentioned the Florida case. Were you going to be an expert witness in that case?
MR. CURTIS: I'm going to object to that, because that involves the communications between counsel and the witness. I'm going to instruct him not to answer.
MR. ORENSTEIN: Well, he can answer that without

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disclosing any communications. It's just a yes or no answer.

MR. CURTIS: I don't think he can.

BY MR. ORENSTEIN:

Q. Did you meet with anybody to discuss whether you'd be an expert witness in the Florida case?

A. At some particular point that possibility was mentioned. And I -- that's it. I mean that's the sum total of -- of anything --

Q. Did you --

A. -- dealing with the Florida case.

Q. Did you write an expert report in that case?

A. No, I did not.

Q. Did you give a deposition as a witness?

A. No, I did not.

Q. Did you consult with the defendants in that case?

MR. CURTIS: I --

THE WITNESS: We discussed -- this was in advance of any of that. So, yeah, I don't know -- are you --

MR. CURTIS: I'm going to step in and instruct the witness to make sure to not talk about any substantive communications that he may have had with the attorneys.

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MR. ORENSTEIN: I'm just asking whether he did consult. I'm not asking him what the subject matter of his consultation was.

THE WITNESS: I did not consult with anyone who said, "I am a defendant in the Florida case. Give me this information." Or give me your opinion, or give me whatever. No.

BY MR. ORENSTEIN:

Q. Who did you --

A. Or plaintiff, either.

Q. Who did you consult with?

A. The only thing that was mentioned, as to whether or not I might ever, in any form or shape, possibly be called upon to provide expert testimony was with Mr. Curtis, Ms. Carchman. And they just said that was a possibility.

Q. Okay. Was your department reimbursed for any time that you spent on the Florida case?

A. As far as I know, not. I haven't been -- whatever my department was reimbursed, it was reimbursed for consultation provided to this law firm okay? So how that law firm is using that consultation, you'll have to ask them.

They've obviously used it here. I mean that's self-evident.

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Q. Have you ever had any of your research funded by any of the tobacco companies?
A. None of my personal research, no.
Q. Any of the research you've conducted for your department?
A. None that I've conducted for my department.
Individuals in the department I've mentioned earlier, have had -- that I've had very loose collaboration with, have received some funding from -- from the Tobacco Institute.
Q. Have you worked on those projects?
A. Not directly, no.
Q. Were you --
A. And I -- I wasn't -- I was never listed as an investigator. My name is not on the publications, et cetera.
That same laboratory, where we were doing some other investigative work at that particular time and I was aware of the research being done, but I didn't participate directly in that.
Q. You used the words loose collaboration; what did you mean by that?
A. Only that I was working with the same people in developing certain kinds of methodologies.
I mentioned earlier on that one of the things I

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was interested in the beginning was the detection of trace metabolites and so on. And we had, for a period of time, a fellow by the name of Al Castro who was a member of our department, another fellow by the name of Burt Malkus, who was somewhat associated, and we all did some research and published some papers together dealing with radioimmunoassay methods and so on. Presented a couple of papers on that. I think -- I hope I've cited those.

In any case, Al and -- Al had a grant for developing an assay for cotinine and for nicotine in urine. And did that. And in the process of developing -- attempting to develop tags for that particular thing, I have a background in organic chemistry and so we talked about that.

Q. Is it fair to say that some proportion -- excuse me --

Is it fair to say that some proportion of your department's income over the years has included payments from tobacco companies for research?

A. Boy. I'm not exactly sure at which particular point we'd be talking about. Pocket change, because that's like all that was involved in this particular case.

We run an annual budget of roughly somewhere

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between seventeen and twenty million dollars. I can't imagine that this study involved more than twenty thousand dollars. And that was one study over a period of twenty some years I've been there. So out of roughly four hundred million dollars, roughly twenty thousand dollars there.

Q. Any other studies of which you're aware of?

A. None that I'm aware of. None that I'm aware of. There may have been others, but none I'm aware of.

Q. My questions have been using the term tobacco companies. Companies also have set up research groups that fund research such as The Council for Tobacco Research.

A. Yeah.

Q. Would your answer be the same for affiliated research organizations?

A. Yeah. Yes, it would.

Q. To the best of your knowledge are the publications that you list on your CV on pages two, three, and four a complete list?

A. Yes.

There have been a couple of papers that have been submitted for consideration, but nothing published.

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Q. Are those pending?
A. No, they're not pending. They haven't been accepted for publication.
Q. Their submission is pending?
A. It's actually been submitted.
Q. Okay. They have been submitted. But they haven't been acted upon?
A. Yeah. For consideration, right.
Q. What are those papers you wrote?
A. One is a case study involving Munchausen's syndrome. And the other one is a related publication with respect to computerized fraud in medical records.
Q. The paper relating to computerized fraud in medical records -- what conclusions did you draw in that paper?
A. It's a new dilemma for modern medicine to face. Ordinarily one thinks of -- of data that is in computer systems as being somewhat sanitized and -- and perhaps even more valid than traditional medical information because some sort of care must have been associated with that. And yet there clearly is the potential for people to -- to -- to falsify data that is placed in -- in patient's medical records, or in their -- or if they have access, into their own

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medical record.

Q. You make a distinction when you list these articles between articles in referee journals and other works, publications and abstracts. What's your understanding of that distinction?

A. When an article is submitted to a referee journal article, it is always reviewed by usually a minimum of two people who are either informed or expert in the field in which the publication is being presented. The publication is reviewed for unsupported opinions. It's reviewed for possible errors in experimental design. It's reviewed for inaccuracies with respect to the state of the art. Lots of potential criticisms. I don't know what the actual batting average is for refereed journal articles in general, but probably three-fourths of all publications are rejected the first time they're submitted. Maybe even higher than that. Very often only cosmetic changes are required to satisfy the concerns of the referee.

Q. Okay.

A. And -- and when those concerns have been met, then the paper goes to an editor, who again has the opportunity to reject the article. So that there's a -- there's a bit of scientific validation that goes

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on in those kinds of journals.
Q. Have you ever been the first author of any article that's been published in a referee journal?
A. I don't know. If I've got it listed there, then I have. If not, then I haven't.
Q. Have you submitted your expert report in this action to any referee journals for publication?
A. Have I done what?
Q. Have you submitted the report that --
A. No.
Q. -- your expert report in this action to a referee journal for publication?
A. No.
Q. Why not?
A. It's not original research. It's not an exhaustive survey of one particular body of knowledge. It's not something that could stand as a monograph. It's not something that would be appropriate as a chapter in a book. I mean who the hell would want to publish it? For what reason?
Q. I was just asking.
A. No.
Q. Have you submitted the report for peer review in any manner?
A. No.

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Q. Do you intend to?
A. No.
Q. In drafting this report did you draft it to the standards that one would follow for a publication in a referee journal?
A. For publication in a referee journal? Typically there's only one kind of article that is published in referee journals. There may be review articles and summary articles and so on. They -- very often those are invited, by the way, in referee journals. But typically what they publish is -- and the criteria for publication is new knowledge, new information.
I think I made the statement earlier that I think I could have written that expert report a year ago, and basically had essentially the same report. Maybe even two years ago. I don't think there's any new information that is represented in that report.
Q. Okay.
A. For scientists with open minds, I don't think there is.
Q. You don't think there is?
A. No.
Q. Have you ever held office in any professional organizations?
A. No. I've been a secretary of a local -- local

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chapter of a chemistry group, but that's all.
Q. How many patients have you ever treated who had a diagnosis of lung cancer?
A. That I have directly treated? As the primary or attending physician, zero. Of patients who had that particular disease--I don't know. Twenty.
Q. How about COPD?
A. Roughly similar numbers.
Q. How about heart disease?
A. Significantly larger numbers. Maybe forty.
Q. Never as the primary treater?
A. Never as the primary treater.
None of these patients were ever admitted directly to my care. I have been involved in the care of them everywhere as a medical student, as a resident, and as an attending pathologist.
Q. Have you ever looked at a piece of tissue under a microscope to determine whether a patient had lung cancer?
A. I have looked at several biopsies from the lung, from lymph nodes, from the mediastinum, and so on in patients with various malignancies, but this is not the area of my board certification.
This -- when we talked about surgical pathology, anatomic pathology, I do not have boards. I have

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some experience. I have some knowledge, but I do not have -- so for me that would be malpractice to render a diagnosis based on what I saw. Even if I felt completely confident, I wouldn't.

Q. How many tissue samples have you looked at over your practice to either diagnose or stage cancer?

A. During my training, quite a bit. We used to all -- all malignant disease used to be presented at a tumor conference that I attended. I always saw the -- I always saw the microscopic pictures of it. We still have those conferences. I don't attend them to the same degree of regularity now that I used to.

So, again, I still see quite a bit. I sit down across the microscope from some of my colleagues when they're looking at specimens. But this is not part of my professional responsibility.

Q. You don't have the duty to make the decision about those things?

A. I do not have the duty, no. And I don't have the official credentials for doing it either.

MR. ORENSTEIN: Okay. Why don't we take a short break. It's been a little over an hour.

Go for about ten minutes.

(Recess taken.)

MR. CURTIS: Let's go back on the record.

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I want to cover something with you.

One of the issues that still needs to be resolved in the Meet and Confer, which may or may not have re -- it may not be resolved, we're really not sure what position parties have agreed to concerning the provision of articles that have been published by expert witnesses being deposed.

What we have here is what is available under the current circumstance, without waiving any objections or other concerns that any of the other counsel may have, and without knowing exactly where we're going to end up on this subject to make this available.

Particularly, there's one article that we had Dr. Wunsch go through, that we had available, to help screen out articles that were not his articles, because we found people with the same name. And in doing so he noticed one thing that I think he wants to address with you that relates to some questions that you finished asking a little earlier concerning funding from one of the tobacco-related entities, in this case, The Tobacco Institute. I'm going to make those available to you now.

MR. ORENSTEIN: Thank you.

MR. CURTIS: The article I'm making reference to is on top.

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MR. ORENSTEIN: Counsel, are these articles beyond what were identified in the curriculum vitae?

MR. CURTIS: No, they are not. They are some -- they are the ones we have available.

THE WITNESS: I believe every one of those is in the CV.

MR. ORENSTEIN: Thank you.

THE WITNESS: One of the things -- just --

Do you mind if I follow-up on that?

MR. CURTIS: It's up to counsel, if he wants to follow-up.

BY MR. ORENSTEIN:

Q. If you have a clarification, please go ahead.

A. Okay.

I testified earlier that I have never participated directly in any study that was funded by tobacco, okay. And if you'll notice, there is an attribution at the end of that first article that says that that particular study was.

My firm belief is that the dollars that we received, or the -- not that we received, that Al received from the grant that he received from the Tobacco Institute for the cotinine/nicotine study, that he -- I'm not sure whether he used those dollars, or when we did this particular work he --

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thought, well, I'm going to attribute part of this to dollars I received from them, just as a generous act on his part. I don't believe one penny of Tobacco Institute money was spent on that particular study. But it may have been. There may have been some that was. At this particular point I don't think that anybody would have records that would prove that one way or the other.

Al died many years ago.

Q. The article that you're referring to, I'm not marking as an exhibit because I don't have copies, but it's from the -- it's from a publication called Research Communications in Chemical Pathology and Pharmacology. Its title, "Enzyme Immunoassay, Hepatitis Associated Antigen (HAA). Volume 16, Number 1, January 1977. The first author is A. Castro.

Is that the Al to which you have been referring?

A. It is.

Q. And the witness here today is listed as the fifth author of six.

A. Uh-huh.

Q. Thank you.

Does that complete your clarification?

A. Yes.

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Q. Thank you.

Dr. Wunsch, if we could talk about your expert report.

Correct me if I'm wrong, but I believe you testified that you dictated some things for a first draft. Was this dictation something you did into a tape?

A. No.

Q. Okay. Could you clarify that for me?

A. At the meetings that I held with -- with Mr. Curtis, Ms. Carchman, I stated opinions on a number of matters. In some instances I clarified those opinions and restated them in a form that I felt was a more accurate representation of my views and understanding. And a lot of that was duly recorded by -- by counsel.

Q. When you say recorded, was a tape recording made?

A. No, no. Pencil -- at no time, I don't think, did we ever have -- I don't recall there having been a tape, no.

Q. Okay. How long did this session last where you say you dictated your thoughts?

A. You know, what happened was -- was -- there were a number of questions that were asked with respect to

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the area in which I had the feeling that I could contribute expert understanding. And the -- I think to the extent that some of those areas related to this particular case, that seemed to have some bearing on this particular case, the -- they were recorded or noted. I mean I saw them. I didn't take notes at the time, in which I was expressing those particular views. I didn't even, at the point at which I began expressing those views, think necessarily that I would be called to testify, and if I was called to testify what the -- what the actual area of it would be. Primarily it had to do from the moment of introduction with methods of coding and current medical practice and the accuracy of those particular methods, the coding systems that were involved, et cetera, primarily explaining things. But associating with that expressing some views. At the point at which it was suggested to me that --

MR. CURTIS: I'm going to have to step in.

THE WITNESS: Go right ahead.

MR. CURTIS: And instruct the witness not to answer questions that -- regarding to cover substantive discussions between counsel and the witness. And, you know, we've let this chain of questioning go along, and now we're starting to get

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into that area and once again I'd instruct the witness not to answer questions regarding revealing those kinds of conversation.

BY MR. ORENSTEIN:

Q. My question was how long did you spend in that dictation process?

A. I think that the -- the process -- I don't know when it began and when it terminated. Okay? At which particular point what I said was -- was regarded as something that could possibly be used later for expert testimony, I don't know. So I can't really give you a good handle on that.

Q. Let me ask you for your impression, not counsel's impression.

You had a few conversations, --

A. Yeah.

Q. -- where you told counsel what you were thinking on a number of subjects. You weren't doing that for the purpose of this is now the conversation we're going to have --

A. To generate an expert report, that is correct.

Q. Okay. Did a point come where you sat down with counsel, where it was your understanding that the purpose was now we're going to hear from Dr. Wunsch on what's going to go in his report?

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A. At some particular point that occurred.
Q. So then you had an additional conversation where you related information? Or was it just a follow-up to --
A. I remember restating a number of my views at that particular time. And more or less as I have testified to earlier.
Q. Uh-huh.
A. As to how the report -- what I'm familiar.
Q. How long was that conversation?
A. I testified earlier. I'm going to be found out that I don't remember very well. But I'm guessing somewhere on the order of fifteen hours.
Q. Fifteen hours where you sat down and talked to your lawyers once you knew this was going to be what was in the report? This is the conversation about what's in the report?
A. The total amount of time between -- that was spent from the time in which there was going to be one -- it was on that order. I may be overstating it some.
Q. From the time you knew that your conversations were for the purpose of allowing counsel to generate a report?
A. Yeah, more or less. I mean when you say

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allowing counsel to generate a report -- in terms of formulating a report. Including the drafts that it goes through.

Q. Okay.

A. On that order. And I think that I testified to that earlier.

Q. Was a draft brought to you before you had a conversation about what -- strike that.

Was a draft brought to you before you sat down with counsel, having in mind that the conversation was for the purpose of your expert report?

A. Absolutely not.

Q. Okay. Now, excuse me.

A. I would have regarded that as extremely presumptuous had it occurred. So I'm absolutely positive of that.

Q. Well, you had testified that there were a number of conversations preceding the one where you knew there would be a report?

A. Yes, that is correct.

Q. So I wondered if those preliminary conversations had resulted in the first draft?

A. No.

Q. Thank you.

Looking at page two of your report, which is

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Exhibit 3103, you say that your opinions and testimony will be -- I'm reading from the introduction.

A. Correct.

Q. Your opinions and testimony will be based on your clinical training and experience, your research training and experience, your administrative training and experience, scientific literature on issues relating to this report, and my review of other information.

What other information will you refer to?

A. There's a whole broad exposure of information that I had mentioned earlier. I mean I do read the newspapers. I do watch television. I do assemble lots of other sources of information.

Q. Do you have specific documents in mind?

A. I have no specific documents in mind. I mean one of the things when that question was asked earlier, I remember stating well, if you wanted to read the Miami Herald and Wall Street Journal and New York Times, and whatever were your ordinary sources of information.

Q. Okay. And you list documents produced by plaintiffs. What documents produced by plaintiffs are you going to base your opinion and testimony on?

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A. I'm -- those are the ones that I had cited earlier.
Q. You state medical records, deposition transcripts, and other documents pertaining to the Minnesota Medicaid recipients. Have you reviewed any medical records, deposition transcripts?
A. I have not reviewed any medical records in the sense of individual medical records? I have reviewed some abstracts based upon medical record information, which is part of the expert -- other expert reports.
Q. Part of which other expert reports?
A. This one (indicating). The one of Zeger, Wyant, and Miller.
Q. Those were abstracts of Minnesota Medicaid recipients chosen to be representative of the Minnesota Medicaid --
A. Those particular ones -- I have not seen any of those. I have not seen any individual patient medical records.
Q. Have you seen any medical records in summary form of specific Minnesota Medicaid recipients that were chosen to be representative of the Minnesota Medicaid population by a Court Ordered document?
A. In terms of individual medical records, no.
Q. What have you seen?

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A. The only thing I've seen are the abstracts or the summary data, et cetera, that resulted from those. I have not seen any individual patient medical records.

Q. What do you believe is in the Zeger report that is an abstract of -- representative of Minnesota Medicaid recipients?

A. I don't think there's anything in my report that -- that -- that relates directly to individual medical records.

Q. What did you see in the Zeger report that you referred to?

A. More or less the basis for the way the data was collected and taken from the Medicaid tapes, et cetera. And -- and summary data associated with -- from those tapes.

Q. Is it your understanding that the data utilized by Zeger and the others in their report pertained to Minnesota Medicaid recipients that were chosen to be representative of the Minnesota Medicaid population by the Court-ordered method?

A. No. I don't think that that -- I don't think that -- I don't think that that is what the data that's presented in the report is.

Q. Okay. So what did you mean when you used that

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phrase in this sentence on page two?
A. What happened was I was asked whether or not I'd be willing to review individual records. I expressed a willingness to do that. I was told by counsel that quite possibly I would not need to do that. But that if I were to do that, then I should state that in my expert report.
Q. You have not to date?
A. I have not to date.
Q. To date have you reviewed any deposition transcripts?
A. I have not to date.
Q. Any other documents pertaining to the Minnesota Medicaid recipients that were chosen to be representative of the Minnesota Medicaid population by Court-ordered method?
A. I have not reviewed those individual reports, no.
Q. What did you mean -- what is your understanding of how the Court has ordered Minnesota Medicaid recipients to be chosen to be representative of the Minnesota Medicaid population?
A. My superficial understanding is that there was some sort of relatively simple sampling matter, sampling approach. The first four hundred records,

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or something like that. I can't recall what the detail was. And which apparently was deemed as being adequate by both sides.

Q. Do you know whether those were chosen to be representative?

A. I have no idea. I would have a major problem in deciding the first hundred of anything being representative of anything. But if that's the way the Court ordered it, and I'm assuming that it did -- there were -- I do know there were apparently records which were generated from -- counsel has provided me that information. And that if I were to look at those records and it would be necessary for me to state that that would be included as sources of information for my report.

Q. You don't done so?

A. But I have not done so.

Q. Do you anticipate doing so?

A. Do I anticipate doing so? I think if there are issues that surface with respect to coding in individual cases, that I would be asked, but -- that someone else may not be able to answer. Or provide a view as to how frequently that kind of error occurs.

Q. You haven't relied on any of that information to date?

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A. None.
Q. You haven't reviewed any of it to date?
A. No.
Q. You have no idea whether the recipients were chosen to be representative of the Minnesota Medicaid population?
A. I know they're alleged to have been.
Q. Who alleged that?
A. Understanding it's the Court.
Q. Did you base any of the opinions in this report on that understanding?
A. No.
Q. Would it change any of the opinions in your report if you were told that that was not the intention of the Court?
A. No, it would not change any of the other -- none of the other opinions, no.
Q. Okay. Now you state in the next sentence you may rely upon the work and opinion of other experts and consultants and may comment on the opinions expressed by other witnesses, as well as the evidence on which they rely.

Have you to date relied on the work and opinion of other experts and consultants?
A. That are part of this trial?

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Q. Yes.
A. No.
Q. How about that are not part of this trial?
A. Well, again, if we go back into the general source of information, life goes on.
Q. Okay.
A. I do get exposed to new information.
Q. But you haven't reviewed anything specifically for the purpose of this trial?
A. For the purpose of this trial, no, I have not. No other sources specifically for this trial.
Q. Okay. Is it your intent to supplement this report?
A. That may occur. I don't know what the rules are associated with that. If one -- you know, in this -- I don't quite understand all this stuff here. This discovery stuff and what the ground rules are for that. I will presumably play by whatever those rules are.

MR. ORENSTEIN: Counsel, I don't have a firm position on this yet, but it seems like in several instances already there are some very general statements in this report that reflect Dr. Wunsch's education, training, and experience, but don't reflect specifically on his review of evidence in the

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case. He says he may review that later.

For right now I just wanted to let you know that I may ask to redepose him if -- if he's expressing opinions on things that he hasn't expressed in this report.

MR. CURTIS: I understand your position.

MR. ORENSTEIN: It's probably an issue that will have to be resolved bilaterally.

THE WITNESS: I would respect that, as well. That would only seem to be fair, if I were to generate an addendum, you'd have an opportunity to examine me about that.

MR. ORENSTEIN: Okay.

We may also take the position that he's not entitled to testify on those issues if he had not covered them in his report. We'll take that up later.

MR. CURTIS: I understand your position on that, as well.

MR. ORENSTEIN: Okay.

BY MR. ORENSTEIN:

Q. Doctor, having had the chance now to review the opinions of Dr. Samet and Dr. Zeger and his colleagues, do you have any specific opinions that you want to include in this report beyond the

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statements that are in this report relative to the reports of Dr. Zeger or Dr. Samet?

A. I'm not certain what you want me to -- how you want me to respond.

Q. Do you have any specific criticisms or rebuttal of either of those two reports?

A. I have some general criticisms, in that I think that there are some major flaws associated with the methodology that's being utilized by -- to assess damages. I think that there are -- that there is -- there are major pieces of information, scientific data, that are introduced in Samet's report that are not being interpreted appropriately. And, in part, demonstrate flaws in plaintiffs' argument.

Q. I'll come back to those and ask you to be more specific.

A. Okay.

Q. I just wanted to try to get a sense --

A. Okay.

Q. -- on what your thinking is today.

A. It will take time to be specific about them because I'll have to go through and dig those things out.

Q. Well, if you intend to express opinions on that, would you do that tonight?

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A. I just did in a general sense.
Q. Okay. But if you're going to be --
A. If that wasn't clear, that I find major scientific objection to the methodology as being proposed by which an accounting for the alleged damages from cigarette smoking is being used, I'll restate that.
Q. Well, it's clear to me. But I need to ask you what specifically you find fault with. Not just the -- you have a generalized objection to the report.
A. I understand.
Q. Will you be in a position tomorrow to give those specific criticisms?
A. I may or may not be. Depends on how much time I have to review it. I mean I haven't reviewed this for a while.
MR. ORENSTEIN: Well, we're not going to take time on the record for him to do that. If he intends to make that part of his opinion, he needs to be prepared to testify about that.
BY MR. ORENSTEIN:
Q. Dr. Wunsch, turning to the section of your report on page two entitled, "Risk Factors for Diseases," --

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A. Uh-huh.
Q. -- you say, quote -- you say, "Risk factors," quote, "may have no direct relation to the cause of the disease"; have I read that right?
A. Correct.
Q. Are you meaning to say that a risk factor cannot have a direct relation to the cause of the disease, or just that some --
A. I did not say that.
Q. Please let me finish my question.
Do you mean to say that just some risk factors do not have that relation?
A. What it says is that, "The term 'risk factor' is commonly used to describe factors that are positively associated with the risk of development of disease, but may have no direct relation to the cause of the disease." You know, I'm not sure I can state that any more semantically clear using English.
Q. Is it your opinion that some risk factors do have a direct relation to the cause of disease?
A. Oh yes.
Q. Would you give me an example of a risk factor that does have a direct relation to cause of disease?
A. There's actually an example that's cited in this particular report. One is in the area of infectious

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disease, and I just provided some -- some examples from the past, where -- whereas a -- as a relatively clear instance, a patient who has a veneral disease definitely has a risk of having contracted HIV. And -- and that's simply because the same behavior that produced the veneral disease is behavior that can produce, given the appropriate circumstances, an HIV infection. So there's a more direct linkage.

Q. Would you give me an example of a risk factor that does not have a direct relation to the cause of disease?

A. Sure.

We have many of them that have been alleged, particularly in the area of cardiovascular disease. There have been a whole host of factors that nominally were -- that were thought to be risk factors and, as a matter of fact, some people still cite them as risk factors. But the vast majority of studies that have attempted to isolate those particular factors and test for those particular factors alone have demonstrated negative results. Specific example of this is triglycerides in the area of cardiovascular disease. As far as I can determine, for every very credible study that has looked at that particular issue, has come up with

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negative results. But it's a clear risk factor. Clear risk factor. And it's a clear risk factor because it correlates relatively closely with cholesterol levels.

Q. What do you mean when you say that, quote, "Each patient has unique risk factors for different diseases"?

A. For a very, very large number of diseases that we have there is a genetic component, there is an occupational component, there is an environmental component that looked at on an individual basis is different for every individual. Every individual has a separate history. That's what that is reference to.

Q. Each of those components could play a substantial part in bringing about harm?

A. Absolutely. And do. And do.

Q. In the case of one --

A. And the tools that are used are so inadequate to deal with that truism.

Q. In the case of lung cancer, what are the factors that play a substantial part in bringing about the harm?

A. I can -- I can mention -- first of all, I think that, number one, there's a number of -- number of

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instances with respect to diet.

I think that -- I think education is another -- is another very important risk factor. This is actually cited in Samet's report.

The race. These are -- these are other significant risk factors.

Socioeconomic group. These are other -- these are very important risk factors, in that they correlate, and they probably correlate in more or less direct ways, but they definitely are risk factors.

Q. Is smoking one of the factors that plays a substantial part in bringing about lung cancer?

A. It's one of the risk factors, yes. Absolutely.

Q. Is smoking one of the factors that plays a substantial part in bringing about the harm of lung cancer?

A. It's one of the factors. The problem is the word substantial. Okay. We have -- we -- no one has attempted to very closely identify what that word means. And that's one of the major deficits in most of the scientific studies that deal with the role of smoking and lung cancer, is that they don't attempt to very adequately put bounds with respect to substantive, insubstantive, whatever else it is. And

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that's part of the problem with this methodology, is because a lot of things which we know to be other risk factors are completely ignored.

Q. I'm not asking about what's ignored now, but I'm asking you what your opinion is about whether smoking plays a substantial part in bringing about the harm of lung cancer?

A. I thought I answered that. I said the problem is the word substantial.

Do I believe smoking is a risk factor? Yes, I believe smoking is a risk factor. Do I believe these other factors are risk factors? Absolutely. They are also risk factors. Which parts of those particular risk factors are most responsible for the production of the disease is something that we haven't established, as yet.

And, in addition to that, I firmly believe that there are other risk factors that we don't even know at this particular point, but if we had time and if we did the appropriate science, we would discover that there are other significant risk factors in the production of cancer related to whatever the relationship is to smoking.

Q. I'm not asking you which is most important. I'm asking you whether in your opinion smoking plays

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a substantial part in bringing about the harm of lung cancer?

A. Boy, I've tried to answer that twice. And if I didn't make it, I'm sorry. I can't do better.

Q. Do you have an opinion on that question?

A. I just expressed it.

Q. Can you answer it yes or no?

A. I cannot answer the word unless I can qualify what we mean by the word substantial. And if you force me to, I'll have to say no, to attempt to preserve integrity, because I'm not willing to say that I believe there is a substantially-demonstrated role. Okay. It doesn't -- as a substantial risk factor. The problem is we don't know what substantial even is in this particular area. We don't. There may be some people who they're absolutely convinced they know. This scientist is absolutely convinced they haven't got a clue.

Q. How do you define substantial, sir?

A. There's an approach that's utilized by epidemiologists, and has been used by Samet and by other people --

Q. I'm asking how you define it.

A. How do I define it? Okay. In an epidemiological sense? Or in some other way?

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Q. How do you define it in trying to answer my question?

A. The word substantial comes from some physical substance, I think this is what the word is, meaning more than negligible.

Q. Based on your definition, do you believe -- is it your opinion that smoking plays a substantial part in bringing about the harm of lung cancer?

A. Relative to the other risk factors that are clearly important in the -- whatever the relationship is, is a risk factor that smoking is. I think that smoking is one of the rather minor factors altogether.

If you want it in relative terms to all of the other risk factors -- I think that when we finally get around to completely understanding that particular role, that we may well assess -- I think there's a substantial probability that we may assess the significance, the substantive significance as minor.

Q. Is it your opinion, then, that smoking does not play a substantial part in bringing about the cause of lung cancer?

MR. CURTIS: Objection to the form of the question. Been asked and answered.

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BY MR. ORENSTEIN:

Q. Is it your opinion that smoking does not play a substantial part in bringing about the harm of lung cancer?

A. I -- I've attempted to answer that now three or four times and I really don't think that I can add more to my response.

Q. When I asked it previously I asked you whether you felt that it did play a substantial part. Now I'm asking you whether you believe that it does not play a substantial part, it meaning smoking, in bringing about the harm of lung cancer.

A. I think there's substantial possibilities that the actual role of smoking with respect to all of the other risk factors that are involved, in the evolution of cancer, among people who smoke, is a relatively minor one. Okay? Now, whether relatively minor means not substantial or substantial, I'll leave that for you to interpret.

Q. You don't have a yes or no answer to either question--whether smoking does play a substantial part in bringing about the harm of lung cancer, or whether smoking does not --

A. That's correct.

Q. -- or whether smoking does not play a

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substantial part in bringing about lung cancer?
A. That's correct.
Q. Do you have an opinion whether it's more probable than not that smoking plays a substantial part in bringing about the harm of lung cancer?
A. I think it's less probable.
Q. Less probable than not?
A. Yes. I think it's less probable when we finally learn exactly what all of the mechanisms are that lead to the production of lung cancer among those individuals who smoke. And when we finally get around to attributing responsibility to all of those particular factors that are out there, that smoking will be regarded as -- as -- I think it is probable that smoking will -- will have a more minor role.
Q. It's less probable that smoking will have a minor role?
A. No. Less probable that the smoking will be assigned a minor role.
Q. It's your testimony that it's less probable than not that smoking plays a substantial part in bringing about the harm of lung cancer?
MR. CURTIS: Objection, asked and answered.
THE WITNESS: However you've decided to represent what I've said.

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BY MR. ORENSTEIN:

Q. Now, does the fact, as you say, that each person has unique risk factors for different diseases, mean that scientists cannot conclude to a reasonable degree of medical certainty that a risk factor is the cause of disease in a population of people?

A. No. That's not what is being said.

What is being said is that those particular things seriously confound the attempts of epidemiologists to understand the exact role of various factors in disease processes. We -- we're not at liberty to create colonies of humans where we can subject them to the same sort of studies we can mice, rats, or guinea pigs. And so these are always going to be things that, when we're using strictly epidemiological or statistical approaches, that are always going to be confounding.

To the extent that those particular behavioral traits are part of what's part of the epidemiological model, I think that there are particular instances that we can find, and I think I have pointed to in part in the report, in areas of infectious disease, to where I can have an epidemiological study, but that at some particular point would convince practically anybody on the earth that the static of

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this study were, you know, one chance in umpteen quadrillion billion, that those results could be explained away in another means other than a particular infection. I mean I can -- I can imagine the study in which that -- in which that could occur.

Q. Such as salmonella poisoning?

A. If you want to make it a little bit more specific associated with it, that in the population, no salmonella, salmonella at the time of infection, arising rise of IgM, specific IgM antibodies against the same type as the salmonella that was cultured from the patient. The same from patient to patient, with exactly the same sort of rises in antibodies. You know. You get that sort of a picture that you get out there and it becomes extremely convincing that -- very difficult to imagine a mechanism by which all that could have occurred by chance. And, furthermore, no one attempts to attribute any other elements to that particular causation.

Q. Doctor, is it your opinion, then, that as to chronic diseases, scientists cannot draw conclusions to a reasonable degree of medical certainty whether a risk factor is the cause of disease in a population of people?

MR. CURTIS: Objection to the form of the

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question. Overly broad and general.

BY MR. ORENSTEIN:

Q. You may answer.

A. Let's give it -- can we make it just a little bit more specific?

Q. No --

A. If you're just saying chronic disease in general? Do I think that it's impossible to use epidemiological methods ever to establish relationships -- with respect to more intimate relationships with respect to risk factors in chronic disease? No, I don't think it's impossible.

Q. What's an example?

A. What would be an example?

Q. (Nodding.)

A. A real good one. Peptic ulcer. That's a real good one. Okay? And ultimately epidemiology played a very significant role in understanding the peptic ulcer. Chronic disease. Missed it for a long time. Problems of chronic disease. Human behavior. Complicated process. It ultimately got worked out and it got worked out in part because of epidemiology.

Q. How did epidemiology contribute to the knowledge of peptic ulcer in populations?

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A. There were a number of laboratory tests that we began doing, that were associated with -- with that particular disease. And we have the statistics--how many people have the disease? How many people have these particular laboratory findings? The laboratory findings pointed to more specific laboratory findings. Got incorporated in more epidemiologic studies and more -- and larger, more broad-based studies. And ultimately we now know that probably 95% of peptic ulcer is caused by Heliobacter pylori.

Q. You have confidence in that conclusion?

A. Absolute confidence.

Q. Have you eliminated all other potential risk factors?

A. Have -- have we eliminated all the other risk factors? Probably not systematically. Probably all of the things that were alleged at one point or another to be risk factors associated with that particular illness, the -- probably no one has gone back and systematically said how did we screw up earlier, now that we really know what that disease is caused by? Or the vast majority of the disease.

And it would be an interesting one, and probably no one will ever get around to doing that.

We were ignorant. We published a lot of

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ignorant papers. And now that we understand stuff we're not going to go back and waste our time about why we were so ignorant.

Q. Do you think that's an accurate characterization of the studies that have found a causal relationship between smoking and lung cancer, that people were ignorant?

A. I'm not aware of anything approaching the definitiveness, with which I just discussed peptic ulcer disease, has been discovered with respect to smoking --

Q. You are aware --

A. -- in any disease.

Q. You are aware that people besides you have drawn --

A. Believe --

Q. -- causal conclusions regarding the relationship between smoking and lung cancer?

A. Yeah, there are people that do that.

Q. And do you think that that is like the ignorance you described with the early reports of causal factors for peptic ulcer disease?

A. I think there's substantial possibility, substantial probability, that there's been a gross misunderstanding with respect to the actual factors

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that are most intimately associated with the disease process. Yeah. Uh-huh. I think there's a substantial possibility of that.

Q. A substantial --

A. Even probability. Okay. When we get around to it, it's one of those sort of things, mark my words, I told you so.

Q. What's your understanding -- if I use the term independent risk factor, as opposed to risk factor that's not independent, do you have an understanding of what I mean by that?

A. I think I do.

Q. Why don't you tell me --

A. I understand if you were a statistician I would know what you were talking about.

Q. Why don't you tell me what it means to you and then I'll try to use it in that fashion.

A. The word independent, as coming from a -- from a -- if it were a physicist -- let's assume you're a physicist, okay? We understand the pressure and the volume of a gas to be independent variables, all right? The -- and we treat them as independent variables. I can modify the pressure of the gas by adding more gas without changing the volume. I can -- I can modify the -- the -- modify the volume

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along with the amount of gas without changing the pressure, et cetera. And I can independently manipulate those two particular variables. And when I create the ideal gas model that incorporates pressure and volume and temperature and the amount of a particular gas, okay, I've now defined the independent variables in that particular relationship.

Q. How is the term used in the phrase independent risk factor?

A. Okay.

Q. How is a risk factor independent?

A. Now, when we get into the area of -- much more pure biology, it's more difficult to -- to define independence. It's more difficult to demonstrate independence.

I mentioned just a little bit earlier the relationship of triglycerides and cholesterol as risk factors in coronary heart disease. And if you were to take practically any internist that practiced in the early '70s, they would tell you that triglycerides was a very important independent risk factor for the development of coronary heart disease. You'd still find some today that would make that argument.

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Q. Okay. What do you mean by the term, sir?
A. The term means that if one is able to manipulate one particular variable, without changing any of the other variables, does that -- does that change the risk of whatever it is, the risk of the disease, the risk of the symptom, the risk of whatever. The probability. If in fact that manipulating that particular variable up and down has no influence on the measurable outcome, okay, then it's an independent variable. Now, it may not be a risk factor.

Now, if we take something else, where we have said, okay, this particular risk factor -- let's say sex. Sex and age are independent variables, all right? There's old people who are women, and there's young people who are men, and all this other sort of stuff. There's no relationship between those two particular variables. So those are independent variables almost by definition of independent variable.

Q. Are you aware of studies that identify smoking as a risk factor --
A. I don't believe smoking has been identified as an independent risk factor in any study that has -- that has demonstrated an exclusion of all of the

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other potential risk factors.
Q. So in your --
A. And held all those other risk factors constant.
Q. In your opinion is smoking an independent risk factor for any disease?
A. I think smoking is correlated with other factors that are related to disease.
Q. Sir, please try to answer my question.
In your opinion is smoking an independent risk factor for any disease?
A. I'm not aware that that's been established.
Q. So your answer is no?
A. Yes. It is my informed opinion that the answer is no.
Q. Your answer is that smoking is not an independent risk factor for any disease?
MR. CURTIS: Objection, form of the question. Asked and answered.
MR. ORENSTEIN: We have a lot of double negatives going back and forth here, so I'm just going to try it one more time.
BY MR. ORENSTEIN:
Q. Why don't you say it?
A. It has never -- as far as I'm aware, it has never been isolated in any study as an independent

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variable.

Q. As an independent risk factor?

A. As an independent risk factor.

Q. Now, let's move on.

Still under the risk factor paragraph you state, "Self-reported information..." this is the last sentence of that risk factor section. Quote, "Self-reported information is commonly inaccurate, particularly if it is not elicited in a careful and thorough manner."

What's the basis for that statement?

A. The NMES data, where patients are asked to report on the -- on what kind of health problems that they have, how much money they've spent on it, how much time has been involved, et cetera, et cetera. There are a number of -- number of medical surveys, health surveys, they use self-reported data. And...

Q. What's the basis for your conclusion that it's commonly inaccurate?

A. What's the basis for my conclusion? My basis for the conclusion is years of asking patients about their medical history and being completely mislead by their statements because they were wrong about what they thought was going on.

Q. Do you believe it's improper to use

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self-reported information in epidemiological or statistical studies?

A. I don't think that it's inappropriate. I think what happens is one needs to put some quotation marks around -- around those particular kinds of studies when the -- when -- that's the only -- when there is really no objective finding of the data, that it's just collected from survey, patient -- patient --

Q. You yourself have used patient-reported information in your own research, haven't you?

A. Very, very little. Very little.

Q. Have you --

A. Have I ever used it? Yeah, I suppose I've used it. But very, very little.

Q. Do you use it to treat patients?

A. No. No. Never.

Q. You don't?

A. No. Never. Never.

Q. Physicians who have primary responsibility for patients, though, do use self-reported information?

A. They use self-reported information in coming to their overall assessment.

Most of the diseases I get involved in with respect to treatment -- most of that -- we have mostly subjective data to deal with.

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Q. You didn't use any self-reported patient information in the Sentinel Survey we discussed earlier?

MR. CURTIS: Objection to the form of the question, in that it's ambiguous.

BY MR. ORENSTEIN:

Q. Doctor, is there something in the question that's ambiguous to you?

A. When we discussed that earlier, we actually -- we actually talked about that. And I believe my testimony at that particular time was that the patient's history would lead at times and contribute to the attending physician's diagnosis at the time of admission, or at the time of discharge. And so the fact that some of that information maybe colored or contributed to the diagnosis, yes.

I can't think of a single patient who maybe was excluded from the study based simply on what they said.

I think -- I think one of the things that quite possibly could have occurred, as a case, is if a patient came in to the hospital and the doctor said, you know, "You've got a fever," da-da-da, and the patient said, "Yes, Doctor, I've got AIDS." I think that the doctor might very quickly assess the

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patient, look at the patient's white count, find a very low white count and say, "This is this and this problem, and the patient probably has AIDS," without ever having done a test, without having done an HIV test to confirm the presence of AIDS.

MR. ORENSTEIN: Would you mark this?

(Exhibit 3112 marked for identification.)

BY MR. ORENSTEIN:

Q. Doctor, I'm handing you what's been marked Deposition Exhibit 3112. It is an article from the summer 1977 edition of Florida Scientist, entitled, "Pain in Jaw Bones and Teeth in" --

You'll have to help me with their word.

A. Ciguatera.

Q. " -- Ciguatera Intoxications."

Would you just verify that that's an article on which you --

A. Dr. Deichmann and myself worked on this. Right.

Q. Was any patient self-reported information used in that study?

MR. CURTIS: Excuse me. Have we marked this as an exhibit?

MR. ORENSTEIN: Yes.

MR. CURTIS: Let me get the number.

MR. ORENSTEIN: 3112.

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THE WITNESS: Was there any self-reported information in this study?

BY MR. ORENSTEIN:

Q. Yes.

A. These were all patients who had -- who had reported bouts of ciguatera poisoning. And the -- my particular role in this study was that Dr. Deichmann had some of the fish that these patients had actually consumed. And he was interested in doing some studies on -- on certain animal responses to that -- to that particular poison fish, toxic fish. And so I did his laboratory studies associated with them.

And, as a matter of fact, there is a section in here on the effects on dogs in Table 2. And I generated that particular data.

I can tell -- I can absolutely testify that not one of those dogs self-reported any illness.

Q. Okay. You stumped me.

Could you turn to Table 1, please, which is on page two twenty-nine?

A. Yes.

Q. There are a number of columns on that table.

A. Uh-huh.

Q. Fourth column from the left, "Onset of Signs or Symptoms"?

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A. Yeah.
Q. Then a number of signs and symptoms?
A. Uh-huh.
Q. Going on to the next page?
A. Yeah.
Q. Is that self-reported patient information?
A. Some of that is, yes. Absolutely. This is basically symptomological information. Symptom information.
Q. It was used in this study?
A. Pardon?
Q. It was used in the study?
A. It was used by Dr. Deichmann, yes, it was.

This was primarily a survey that he did. This was not an experimental study. This was a survey of simple reporting of epidemiologically-collected information. I mean he came to conclusions about the frequency of certain symptoms based upon these particular patients.

Q. You signed your name to this article, didn't you?
A. Oh yeah.
Q. Are you disavowing its conclusions?
A. No, I'm not disavowing its conclusions at all.
Q. Did you tell the Florida Scientist publication

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that it's -- that the conclusions of your study were unreliable?

A. No, I didn't.

MR. ORENSTEIN: I'll have you mark this, please.

(Exhibit 3113 marked for identification.)

BY MR. ORENSTEIN:

Q. Doctor, I'm handing you what's been marked as Exhibit 3113. It's an article from the October 1975 American Journal, entitled, "Qualitative Determinations of Acid Phosphatase Activity in Vaginal Washings." Would you please look at it and confirm that you're the second author of that article?

A. I am.

Q. What were you and your co-authors investigating in this study?

A. We were attempting to establish a methodology that could be utilized in the study of purported victims of rape, trying to determine the bounds by which the particular study -- or the particular assay that we set-up could be -- could be used.

Q. Would you please turn to page four twenty-four of the report under the subsection "Subjects"?

A. Uh-huh.

Q. Could you just read that into the record, those

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two sentences?
A. Which two sentences? The one on subjects?
Q. Yes. Starting with "Total"?
A. "A total of forty-one girls and women, ages eleven to fifty-five years, was selected from patients examined at Jackson Memorial Hospital, Obstetrics and Gynecology Clinics, patients with non-gynecologic problems hospitalized for longer than three days, and alleged rape victims. Each patient was asked the time and date of most recent sexual intercourse, contraceptive used, if any, and whether a douche had been used after intercourse."
Q. Is that self-reported patient information?
A. Yes, it is.
Q. Was that verified pathologically or clinically?
A. No, we didn't -- we didn't go beyond asking the patient those particular questions.
Q. Did the study rely on what the patients told you?
A. Yes, it did.
Q. Did you tell the editors of the American Journal of Clinical Pathology, when you submitted this article, that its reliability was in doubt because you used self-reported information?
A. No. And it wasn't because of that.

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The major conclusions for this article had very little to do with the actual information that was provided by the subjects. And in a number of cases we had objective cases to go along with it. There were, in some cases, witnesses to rapes, including the particular timing that was used. The --

Q. Doctor, you told me you didn't verify any of the information --

A. What do you mean that I didn't verify it? In no particular case did we say we're going to ignore all the information except this little subset of information we referred to here. This is what we did methodologically in every case, okay?

The fact that there was additional information in some of the other cases, I mean, it's -- it's -- it's not kosher to ignore that sort of information.

Q. The information --

A. Certainly, if it ends up being conflicting, than these -- wait a minute. Wait a minute. We can't use this subject because we've got some conflicting data.

Q. Okay. The information you received from patients regarding the time and date of most recent sexual intercourse, contraception use, if any, and whether a douche has been used after intercourse, was important to you in your study?

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A. Yes. I think that data was really pretty damn accurate, too, because it happened just a matter of hours after -- after patients had intercourse. Not something that one is reporting about what happened to him in the last year.

Q. Doctor, let's turn to the top of page three, where you discuss whether cause is sufficient, whether cause is necessary. Can you give me a citation for the distinction you make in that paragraph?

A. Yes. Aristotle. I mean one of the things that Aristotle discussed in his rules of logic and so on was this particular distinction.

Q. What is the relevance of the distinction to the questions at issue in this case?

A. What happens in this -- why do the words -- why the distinction between sufficient and necessary? Why does one make those distinctions, is that what you're asking me?

Q. You included it in your report. What is its significance in this case?

A. I think that there are some people who have alleged that -- that smoking is a -- is a cause of -- of this disease or that disease. And if that allegation is correct, then how do we understand it?

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Do we understand it as a necessary cause? Do we understand it as a sufficient cause? And -- and I think that those are relatively important distinctions.

Q. Could something be a cause of a disease, but be neither a sufficient cause or a necessary cause?

A. Can something?

Q. (Nodding.)

A. Yeah.

Q. So you're not meaning by your discussion here of sufficient and necessary, to exclude smoking as a cause of disease, are you?

A. What happens is that -- is it -- no. No. But what does happen here is that certainly the one thing that is absolutely ruled out is that it's not a necessary cause. We know that. And we also know in a number of cases it's not a sufficient cause. So what kind of a cause is it? Where is the causal relationship, if in fact it's not a necessary cause and it's not a sufficient cause, what kind of cause is it? I mean those are two causes in which we have -- we've definitely established from a purely logical viewpoint.

Q. You said in a number of cases it's not a sufficient cause. Is it your opinion that there are

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cases in which smoking is a sufficient cause --

A. No.

Q. -- cause of disease?

A. It is my opinion in which the possibility exists, but -- there's a major step between leading to the possibility and saying that something is a cause.

Q. But smoking -- you're not excluding smoking as a cause of disease merely because you allege that smoking is neither necessary or sufficient cause of disease?

A. State one more time, please.

Q. You're not excluding smoking as a cause of disease merely because you've concluded that smoking is neither a necessary cause or sufficient cause?

A. I'm excluding it as an established cause, yes. I am excluding it on that particular basis. Am I excluding it as a potential or possible cause? Absolutely not.

Q. Would you please give me a reference for your statement that smoking is not a sufficient cause of lung cancer?

A. That it's not a sufficient cause?

Q. Okay.

A. I just had a friend that died fairly recently.

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If in fact -- it was a nonsmoker. Hadn't smoked. It wasn't necessary in this particular case. Had he ever smoked, it would have been clear that it wouldn't have been a sufficient cause either because he obviously didn't die of it.

So you can have smoking in people who die of lung cancer, but that -- the fact that they smoked didn't have anything to do with the fact that they died of lung cancer. So it's not sufficient if those particular patients and -- and, as a matter of fact, this is...

I mean I don't know why we're really talking about this, because to a very large extent this is brought up and discussed in -- in the model that's related to by Zeger, Wyant, and Miller. I mean -- this is just clarifying those particular terms. That's all. In the same sort of way that they've clarified them. I don't think I have any different understanding than they have of those particular words.

Q. I asked you for a reference to your statement that smoking is not a sufficient cause of lung cancer.

A. Can I give this -- can I give your expert witness as a reference?

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Q. They do say that people get lung cancer who do not smoke.
A. That's correct.
Q. And people who smoke -- there are people who don't --
A. Who don't get lung cancer. Correct. They say both of that in this -- in this, so is this acceptable as a reference?
Q. I'm not answering your questions. I'm just asking them.
A. Okay. I think it --
Q. I think that they would probably use the terms differently from you, but they're not here --
A. Okay. I don't think I'm expressing a different qualitative point than what they are.
Q. So you would be comfortable relying on their opinion as to whether smoking was a necessary --
A. No, I didn't say that. That's not what I said.
Q. If it turns out that they don't agree with you, can you give me another reference?
A. Yeah. Okay. I mean I -- I mean --
Q. Because --
A. I'm sure they may not agree exactly with some of the things I have to say, but they do state -- they state in here that our model allows for the fact that

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there are people -- okay.

Q. They don't use the same terms you do. Let's go on to another reference.

A. Like I say, if you want to go back to Aristotle and look at those particular words and the way they used them and discourses on logic, you'll find those words used in exactly that way.

Q. I asked you for another reference for your statement that smoking is not a sufficient cause of lung cancer. You said that in your report. You weren't relying on the Zeger report for that at the time you wrote this. Please give me a reference for that.

A. Let's read what I've said here. Okay? "In the case of disease, a 'cause' is termed sufficient when it inevitably produces or initiates a disease..." All right.

Q. Okay. Doctor, I want to refer you to a statement in the second paragraph that smoking is neither a necessary nor a sufficient cause of lung cancer, and I'm asking you for a reference for that statement.

A. And I believe that this qualifies as a reference. Because they state precisely the same thing in this report.

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Q. You don't have another reference?
A. I don't have another reference to give you right now. I mean it's sort of common sense.
I'm really getting into a really semantic thing here that I don't think we should get into.
Q. Let's talk about your analogy here of salmonella poisoning and chicken salad and dessert. Am I correct you used the illustration on page three to show that chicken salad with mayo and dessert with whipped cream would both be sufficient causes; correct?
A. Yeah.
Now I'm going to qualify this, okay? Specifically this applies to chicken salad or mayonnaise infected with salmonella organisms? All right. It doesn't say that. But that's clearly what is intended here.
Q. Now earlier I asked you if there was anything you wanted to change in your expert report. You said no. Is this a change you wanted to make?
A. In this particular case I would have to say yes. It is a change. It's a clarification.
Q. Tell me exactly how you would rewrite --
A. Chicken salad with mayonnaise or dessert with whipped cream infected by the salmonella organism,

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okay, would be a sufficient cause. But it's actually the salmonella organism in these foods. And I think that a lot of people would read that the way I just said it. If anything, it's the ambiguity of the English language. I'm not adding information. I'm attempting to clarify what may be ambiguous in some people's minds.

Q. I'm not trying to be critical. I just want what --

A. I understand that. Okay. And so to make this less ambiguous, this is the way that particular sentence would be modified.

Q. Doctor, isn't it true that someone could eat chicken salad or dessert with whipped cream for many years and not get salmonella --

A. That's exactly my point. That's exactly my point of making this clarification. Chicken salad with mayonnaise or dessert with whipped cream that is infected with salmonella would be a sufficient cause. Okay. But the presence of the salmonella organism in foods is the necessary cause.

Q. Okay. Isn't it true someone could eat chicken salad or dessert with whipped cream, --

A. Absolutely.

Q. -- where it was infected with salmonella, and

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not get salmonella poisoning?
A. Yes. Yes. Absolutely.
Q. Isn't it true that someone could get salmonella who's never eaten chicken salad or dessert infected with salmonella?
A. Yes.
Q. How is that different from smoking?
A. Only in terms of the illustration of those -- the usage of those particular words.
Q. I don't understand. It's the same thing. You can --
A. No, no.
Q. You can --
A. As far as --
Q. You can get it --?
A. Your --
Q. Just a second, Doctor. We need not to talk over each other.
You can get salmonella if you've eaten chicken salad or dessert with whipped cream that's infected?
A. Yep.
Q. You may not get it from eating chicken salad or dessert with whipped cream that's infected?
A. Yep.
Q. You can get it from other things?

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A. Yep.
Q. You can get it if you've never eaten?
A. Yep.
Q. Isn't that exactly the same --
A. You can't get it unless you've got the salmonella, okay? You can't get salmonellosis unless you get the salmonella, okay? That's the point. All right. And that's fundamentally different from the distinction with respect to lung cancer. Okay.
Q. How?
A. Lung cancer is a disease that has -- that exists independent of smoking, and existed before people smoked. It will exist after they stop smoking. Okay? I mean it's an entity. It's not caused in the sense that it's brought into existence by the fact that smoking exists.

On the other hand, salmonellosis is only caused by people who are infected by it. But not everybody that gets exposed to salmonella always gets salmonellosis.

So there -- do you understand now? I'm trying to make the distinction.
Q. People who smoke -- some of the people who smoke don't get lung cancer; correct?
A. Yes.

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Q. Some of the people who don't smoke get lung cancer; correct?
A. Correct.
Q. And people who eat salmonella-infected food--some of them don't get salmonella poisoning; correct?
A. Correct.
Q. And some people get salmonella poisoning without eating chicken salad and dessert; right?
A. But never without being infected by salmonella.
Q. Okay. That's the issue of necessary?
A. That's the issue of necessary.
Q. What's the issue of sufficient?
A. Sufficient in this particular case was the vehicle that carried it, okay? Is that -- I can implicate, as a particular vehicle in a particular outbreak, and we do, we have this all the time in various epidemics, particularly with salmonella. That the most recent one I read about was caused by canteloupe. Another one caused by tomatoes. Another watermelon.

As a matter of fact, salmonella in Miami, which there is salmonella, was caused by watermelon. And in these particular cases, where one has a vehicle, and in this particular case attempting to identify

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that particular vehicle from an epidemiological study. But we have to demonstrate that, in fact, we've got the organism. And ultimately in those epidemiological studies you actually have to demonstrate -- to say this vehicle was sufficient cause. If you don't do that, you can't say that.

Q. Under your analogy smoking is not a sufficient cause of lung cancer?

A. Yes, under that analogy.

Q. Are you aware of any public health officials who have used this distinction between necessary and sufficient in order to conclude that smoking is not a cause of lung cancer in populations of people?

A. I'm going to go back to my -- I mean I look at this as being not an issue of debate or dispute or literature or whatever else it is. I think that this -- look at this as being common sense. I'm not saying anything -- I'm not saying anything with respect to the causation here that is not said in here (indicating), okay? And in -- and if you feel that I am purporting to say something different than what is in here, than I -- I retract that.

Q. Okay.

A. I mean I'm not saying anything different than what you said. There are patients who have lung

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cancer who have no relationship to smoking. There's a lot of patients who smoke who have no relation to lung cancer.

Q. For the benefit of the transcript, the "here" and the "here" that you're referring to are the documents --

A. I'm sorry.

Q. -- documents in each of your hands?

A. I was holding up -- when I referred to the -- "I'm not saying anything different than what was reported in here," I was holding up the report of Zeger, Wyant, and Miller.

Q. You're not saying different than your own report?

A. In that regard, no.

MR. GINDER: That topic?

MR. ORENSTEIN: Yes.

Counsel, I think we can only have one person objecting at a time. But I don't mind that clarification.

I wasn't trying to rope it in for the entirety of the Court with that objection.

MR. GINDER: That comes later.

BY MR. ORENSTEIN:

Q. Let's go to the section of your report entitled

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"Epidemiology"?
A. You know, we used this for point of information. We used those same words in physical sciences, too. Okay. And they also have relationship to independence and dependence and variables.
Q. Okay.
MR. ORENSTEIN: My plan, counsel, -- it's five after 5:00. My plan would be just to keep going for another fifteen, twenty minutes. Break for the day. We could break now and keep going. We could break now and stop. It's up to you.
THE WITNESS: Let's go.
(Reporter break.)
BY MR. ORENSTEIN:
Q. It's not our intention to make value judgments, sir. I just trying to figure out what you're saying.
A. I understand.
Q. Doctor, what references did you rely on in the section of your report entitled "Epidemiology"?
A. What particular references? I am not certain that I have identified specific references. The -- I have, in terms of my own background in dealing with error analysis, this is part of my training as a --

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as a pathologist. I do this. You know, this particular thing -- pathology. I am a pathologist. The word pathology means study of disease. And a critical aspect of that is the understanding of the etiology, the origin, the cause of disease. One of the fuels that's utilized for those particular purposes and it's utilized in pathology studies, is epidemiology. Epidemiology, I think, is probably a more specific area of applied mathematics than, say, plain geometry is, that people are exposed to in high school. But this is part of the training of -- of -- of pathologists. And I had testified earlier that I actually taught aspects of epidemiology to the residents.

So I'm not sure that I have -- if I were to cite any source, it could come from practically anything associated with medical statistics.

Q. Is this one of the sections of your report for which you have consulted the DeVita and Harrison's texts?

A. No, it is not.

Q. Would you agree that epidemiology is an accepted scientific discipline?

A. Yes.

Q. Would you agree that epidemiology is the field

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of public health that studies the incidence, distribution, and etiology of disease in human populations and applies the findings to alleviate health problems?

A. Among others.

Q. Among other what?

A. I mean those are things that it does.

Q. Would you agree that the purpose of epidemiology is to better understand disease causation and to prevent disease in groups of individuals?

A. I don't think that it's a science of studying disease causation, no. I don't think so.

I think it's a study of the understanding of the data that relates to various diseases and the relationships among the data. I don't think that it's -- anyone who puts that its primary objective is to determine the cause of disease I think is -- is not stating accurately the nature of the science.

Q. Let me read it to you again. You may have heard something different from what I read. Would you agree that the purpose of epidemiology is to better understand disease causation and to prevent disease in groups of individuals?

MR. CURTIS: Objection to the form of the question. It's asked and answered.

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THE WITNESS: Do I think that it contributes to the understanding of those areas? Absolutely. I think it contributes.

BY MR. ORENSTEIN:

Q. Do you agree with the statement that I read?

MR. CURTIS: Objection to the form of the question. It's asked and answered.

BY MR. ORENSTEIN:

Q. You may answer.

A. I think that the -- to say that it's the purpose of it? Yeah, I don't think that that's the purpose of it.

Q. Is it your opinion that because there are many possibilities for errors in epidemiological investigations that we should disregard epidemiology as an accepted discipline?

A. No. That's not my view.

Q. Is it more accurate to say that we should be aware of the possibility of error and take that into account in any epidemiological findings?

A. Absolutely.

Q. Your report lists three types of errors on page three: Random error, systematic error, and confounding; have I read that correctly?

A. Correct.

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Q. With respect to systematic error, would you please tell me how selection bias could impact the result of any epidemiological studies measuring the relationship between smoking and disease?

A. Let me --

MR. CURTIS: Objection to the form of the question. It's overly broad and general.

THE WITNESS: Okay.

BY MR. ORENSTEIN:

Q. Go ahead.

A. A systematic error -- as an example of, quote, a systematic error, you may not think of this as an error, but it nonetheless would be regarded as a systematic error.

Q. I asked you about selection bias as a result of systematic error.

A. All right. I will give you an example of selection bias.

Is if, in fact, you select some particular group without regard to consideration of sex in that particular group, and you come to some conclusion that you attempt to apply to all of humanity, when in fact there was a systematic bias because four-fifths of the people in the study happen to have been women or men. That's an example of systematic bias.

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Q. Could you tell me how selection bias could impact the result of any epidemiological study measuring the relationship of smoking and disease?

MR. CURTIS: Objection to the form of the question. Overly broad and overly general.

THE WITNESS: Unfortunately, practically every conclusion that can be made from any of the epidemiological studies associated with smoking is representative of systematic error because one has excluded a large number of variables which are known to be important variables in the study.

BY MR. ORENSTEIN:

Q. Just a second, Doctor.

How could selection bias introduce an association between smoking and lung cancer where the association did not actually exist?

A. I'm not -- I don't see how there would be bias if not association. I find that a mutually contradictory question, so I can't answer that question.

Q. Isn't it your opinion that because of selection bias what appears to be an association is not an association?

A. By bias -- the assumption is -- when we talk about bias the assumption is what we're dealing with

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has significant variables. So when you say bias with a variable that's not associated -- that's mutually contradictive and those are words that I can't process together.

Q. Isn't it your testimony that selection bias masks the true basis for an association?

A. Yes. Yes. Part of my testimony, yes.

Q. Then can you give me an example where selection bias has masked the true basis for lung cancer, where it appears from an epidemiological study that smoking was the basis?

A. An example of selection bias.

Q. In research on smoking and lung cancer.

A. Yeah.

You know, if you want to take just as a simple example Doll's study with respect to mortality in physicians. One's introduced an enormous bias if one is going to say I'm going to generalize all of humanity with whatever happens to doctors. Okay? There's a clear instance of a systematic incredible bias that is introduced in a study. Conclusions with respect to the British physician population probably are reasonably accurate. The extent that that can be extrapolated beyond that particular study? Major limitations.

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Q. So you're critical of the British doctors' study on that basis?
A. I'm critical in the sense that if one does not critically look at what the study has done, then of course you can be seriously mislead into any conclusions that you're going to come to.
Q. Do you believe that the conclusions of the British doctors study seriously mislead the public?
A. Do I think that -- that they seriously mislead the public? I think if you take the data as it's presented, and most of it is presented primarily as data without conclusions, it's mostly people who have added a lot of their own conclusions to that particular study and those particular studies. I think that a lot of the conclusions that other people have reached on that study are misleading.
Q. As long as we're on this subject --
MR. ORENSTEIN: Why don't you mark that?
(Exhibit 3114 marked for identification.)
BY MR. ORENSTEIN:
Q. Doctor, I'm handing you what's been marked as Deposition Exhibit 3114. This is an article from the British Medical Journal entitled, "Mortality in relation to smoking: 40 years' observations on male British doctors," authored by Doll, who is the

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gentleman you named before, and several others.

Have I accurately described that article so far?

A. Yes.

Q. Would you please -- is this article published by the authors of the study themselves, or by other people drawing conclusions about this study?

A. The -- I have not read this article.

Q. After you were just testifying about the flaws in the Doll study on British doctors?

A. (No response.)

Q. You haven't read it?

A. There are many, many studies that he's published. How many papers do you think are cited in this particular study? Can I look at the number of times the word Doll comes up in the bibliography here? Okay. I see it several times.

Q. Okay.

A. So --

Q. Doctor, --

A. So this particular digest I'm not sure -- I have not -- if I've read this particular digest, I have not read it -- read it in recent times.

Q. Would you please look at --

A. This is published in 1994.

Q. Would you please look at the -- under the first

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bold face section there, Abstract, the last part of that section, Conclusion, and just read that into the record, please?

A. "Results from the first twenty years of this study, and of other studies at that time, substantially underestimated the hazards of long term use of tobacco. It now seems that about half of all regular cigarette smokers will eventually be killed by their habit."

Q. Doctor, do the authors of this study limit their conclusion to British doctors?

A. In that particular statement, they don't.

Q. In your opinion is that seriously misleading the public?

A. Yes.

MR. ORENSTEIN: Why don't we stop now because there -- there's just a lot. We could go till 6:30 if I continue on this line of questions. Is this a good time?

MR. GINDER: Sure.

MR. ORENSTEIN: Off the record.

(Adjourned at 5:16 p.m.)

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C E R T I F I C A T E

STATE OF MINNESOTA }
}
COUNTY OF GOODHUE }

I hereby certify that I reported the deposition of CHRISTIAN D. WUNSCH, M.D., Ph.D., on the 3rd day of September, 1997, in Minneapolis, Minnesota, and that the witness was, by me, first duly sworn to tell the truth;

That the testimony was transcribed by me and is a true record of the testimony of the witness;

That I am not a relative, or employee, or attorney, or counsel, of any of the parties; or a relative or employee of such attorney or counsel;

That I am not financially interested in the action and have no contract with the parties, attorneys, or persons with an interest in the action that affects or has a substantial tendency to affect my impartiality;

That the right to read and sign the deposition by the witness was reserved.

WITNESS MY HAND AND SEAL this 8th day of September, 1997.

_____
Janet D. Winberg, RPR
Notary Public,
Goodhue County, MN
My Commission expires
1/31/2000.

{Seal}

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